CONSTRUCTION
METHODS AND EQUIPMENT

February 1955

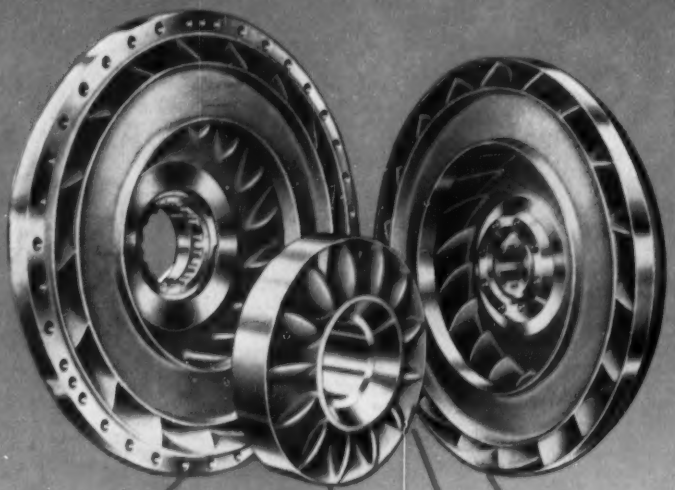
A McGRAW-HILL PUBLICATION

CLARK— TORCON

NOW...

one strong source for industry's most

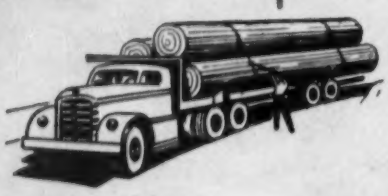
EXTENSIVE LINE OF TORQUE CONVERTERS

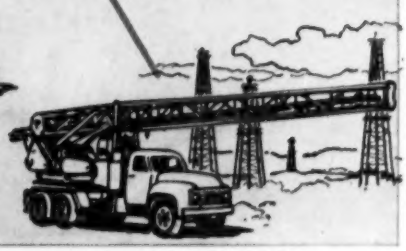


THE DESIGN and field experience of Torcon, pioneers in the development of industrial torque converters . . .

THE QUALITY manufacturing experience and versatile plant facilities of Clark Equipment Company . . .

COMBINE to provide you with industry's broadest line of industrial torque converters—11", 13", 14", 15", 16", 17", 18", 19" and 26", 30 to 600 hp. We welcome your inquiry . . . write to our Jackson, Michigan plant for information on how we can serve you.

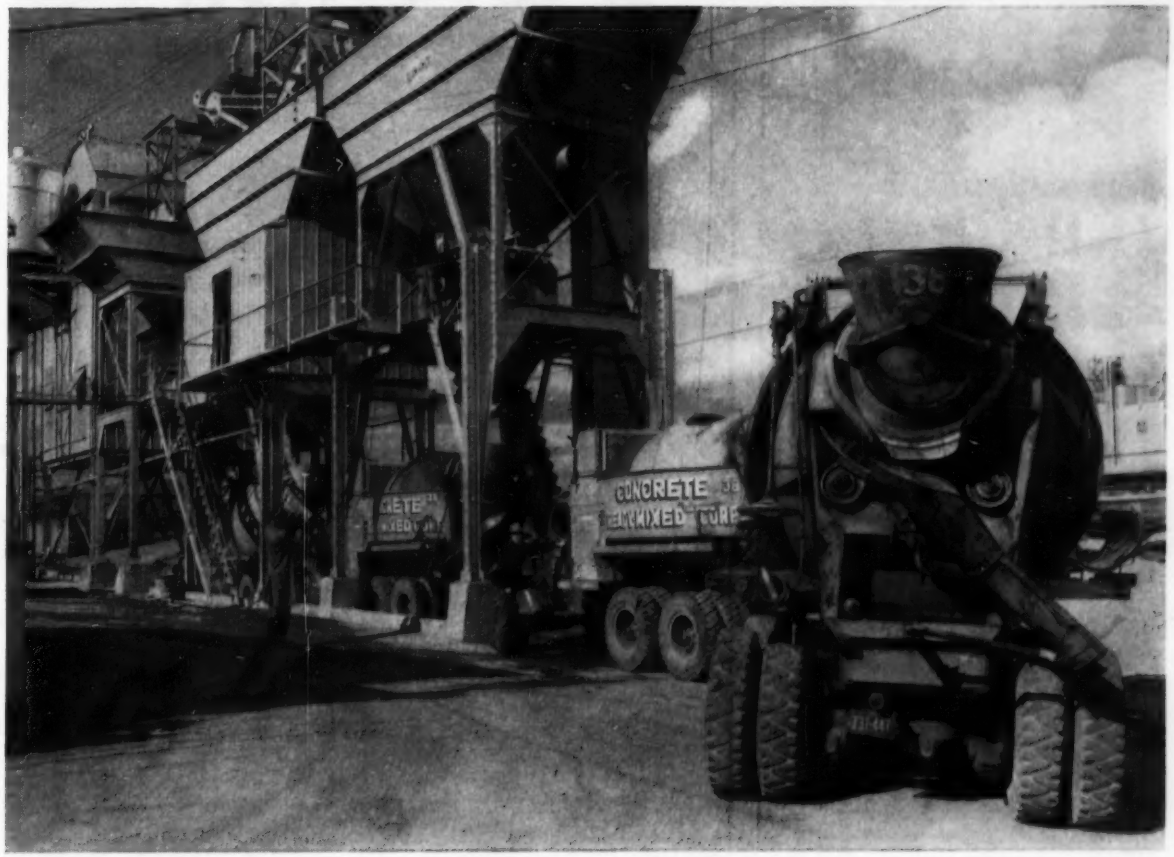




CLARK® EQUIPMENT COMPANY

JACKSON, MICHIGAN

B.F.Goodrich



Universal tires average 40,000 miles in concrete delivery service

THE Concrete Ready Mixed Corp. delivers concrete to construction sites around Roanoke, Va. The trucks work 60 hours a week hauling gross loads of 20 tons over all types of roads, often over no roads at all.

CONCRETE READY MIXED CORP. reports they save 60% by being able to recap B. F. Goodrich Universal tires. They say the specially-compounded Universal tread gives so much traction, they never need chains.

For rugged service like this, the company specifies B. F. Goodrich Universal tires, reports they defy rock cuts and bruises, roll 40,000 miles and can be recapped!

All-Nylon cord body

Universal tires wear longer because they are built with an all-nylon cord body (sizes 12.00 and larger). Nylon is stronger than ordinary cord materials, withstands double the impact and resists heat blowouts and flex breaks.

Under the tread is the B. F. Goodrich nylon shock shield. Layers of strong nylon cords stretch together to absorb and distribute impacts and shocks. Result: Universal tires wear longer, can be recapped more times. You pay nothing extra for this patented B. F. Goodrich nylon shock shield.

See all-nylon Universal tires at your B. F. Goodrich retailer's (smaller sizes in all-nylon or rayon construction). They'll cut your tire costs by giving you longer, trouble-free service. For the BFG address, look under Tires in the Yellow Pages of your phone book, or write *The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, O.*

Specify B. F. Goodrich tires when ordering new equipment.

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

Volume 37
Number 2

CONSTRUCTION METHODS AND EQUIPMENT

Established 1919

February 1955

On The Cover . . .

This excellent view shows a high production road aggregate plant, owned by Megarry Brothers of St. Cloud, Minn., in operation at Sisseton, S.D. The crushing and screening plant is the new Pioneer Model 35-S, which is light in weight, with crushers, screens, conveyors, etc. of the largest size customarily built into a plant of this kind. The plant can be towed on its own dolly or hauled as a semi-trailer.

An editorial index of articles published in Construction Methods and Equipment during 1954 will be available to readers and libraries. Copies will be mailed free of charge—only upon request. The index will be published separately, will not appear in any issue of the magazine.

Member ABP

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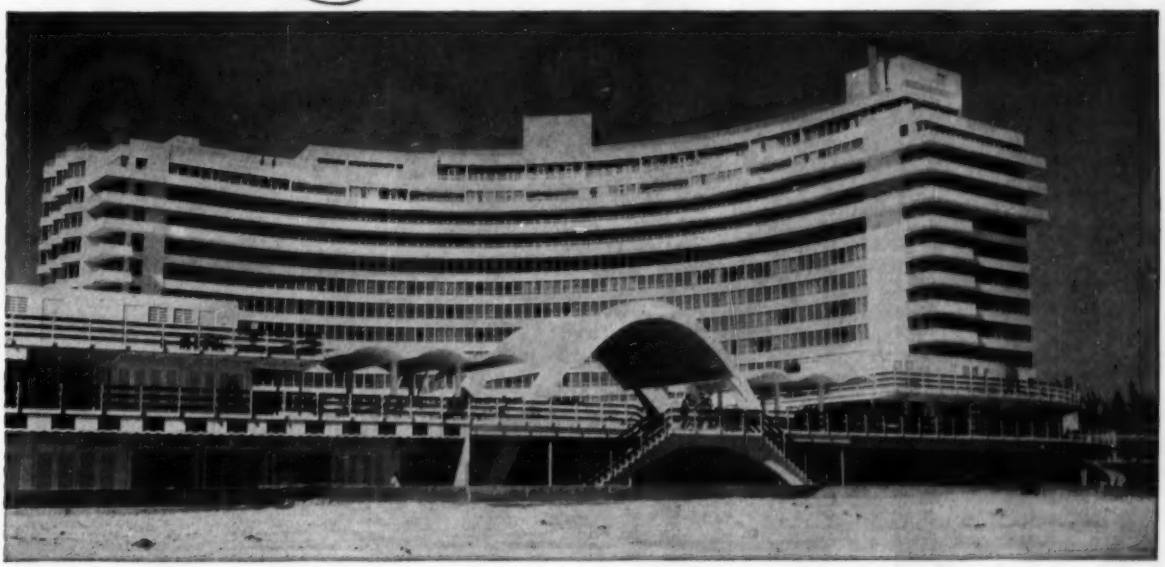
Pay Dirt in This Issue

February, 1955

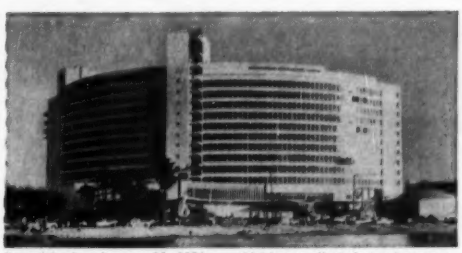
NEXT MONTH

Mass production form setting speeds construction of 13-story reinforced concrete frames for a group of apartment buildings. Forms for first floor of each building are reused in same place on each floor. Column forms are reduced once.

the fabulous **Fontainebleau**



Miami Beach's Magnificent New Hotel, Luxurious Place in the Sun, Concreted with 'Incor' for Economical Speed



Ground broken January 10, 1954 . . . highly complicated structure completed, hotel furnished, staffed and operating December 20, 1954 . . . Contractor says on-time completion would have been impossible without 'Incor' 24-Hour Cement.

THE FONTAINEBLEAU
BEN NOVACK, President
Miami Beach, Florida

Architect: MORRIS LAPIDUS
Miami Beach and New York

General Contractor:
TAYLOR CONSTRUCTION CO., Miami

Ready-Mix 'Incor' Concrete:
MAULE INDUSTRIES, INC., Miami Beach

● Magnificent new $14-million Fontainebleau Hotel, on the old Firestone ocean-front estate, 44th to 48th Streets, Miami Beach, opened its hospitable doors precisely on schedule last December.

Called with good reason America's largest and finest resort hotel, The Fontainebleau reflects in its every line and appointment a happy balance of hotel, architectural and construction imagination.

With concaved façade fronting on 950 ft. of private beach, the new 14-story hotel, air-conditioned throughout, has 565 bedrooms and suites, 263 cabanas, and private yacht anchorage.

'Incor' Speeds Completion

Construction is concrete throughout, for utmost stability and fire safety. On the basis of wide and successful experience, Taylor Construction Co., General Contractor, used 'INCOR' 24-HOUR CEMENT, 23,332 bbls., for dependable high early strength so essential in maintaining precise concreting schedules required for top construction speed at rock-bottom concreting cost.

Clock-like, pour-today-strip-tomorrow schedules saved $37,000. in extra forms that would have been needed for equal speed without 'Incor'. And the Contractor says this figure was dwarfed by time and labor economies due to smooth-running, assembly-line concreting schedules.

Match high-early strength economies with high ultimate strength and long-time durability and you see why 'Incor'* "belongs" on outstanding projects such as this.

*Reg. U.S. Pat. Off.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA.
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 141,600,000 SACKS ANNUAL CAPACITY

conver's new catalog TALKS "CENTS"

The new Conver Catalogue reverts back to the old-fashioned habit of presenting engineering information in the hard, pitiless, bright light of the truly factual. Theres no advertising copy, no "sell"—just solid facts and specifications concerning the finest line of BUILDING and CONCRETE SPECIALTIES, and FURRING ACCESSORIES, in the field.

CONVER talks "cents" in other ways, too! With high labor costs making use of steel forms and other labor-saving devices a virtual necessity, CONVER products are specifically designed to save time, labor, money.

Designed by top-flight engineers, built by CONVER'S expert craftsmen, these building units are backed by a rich history of superior, unfailing performance. Builders all over the country are realizing greater profits with dependable, versatile CONVER Specialties. Our handsome, new CONVER Catalogue will show you why.

WRITE FOR FREE CONVER CATALOGUE TODAY — on your business letterhead.

CONVER STEEL & WIRE COMPANY, INC.

600 East 132nd Street, New York 54, N. Y.

THAT VERSATILE RIG.. THE PULLSHOVEL!

Northwest Pullshovel digging bell holes along with the trench.

Originally built for trench excavation the Northwest Pullshovel, because of its easy control, accuracy of handling and digging power, has been found efficient on a dozen and one jobs. Digging bell holes and basements, trimming banks—even grading road have all been found in the day's work of the Pullshovel.

Versatility like this means money in your pocket and often saves time that would be otherwise eaten up by converting to another type of boom. Ask for details about the Pullshovel. There is a size for your job.

NORTHWEST
ENGINEERING COMPANY
1503 Field Building
135 South LaSalle Street
Chicago 3, Illinois

Handling pipe for a gas line.

Left: Grading road—an unusual Pullshovel operation.

Right: Trimming bank on a bridge approach.

Above: Another bank trimming job.

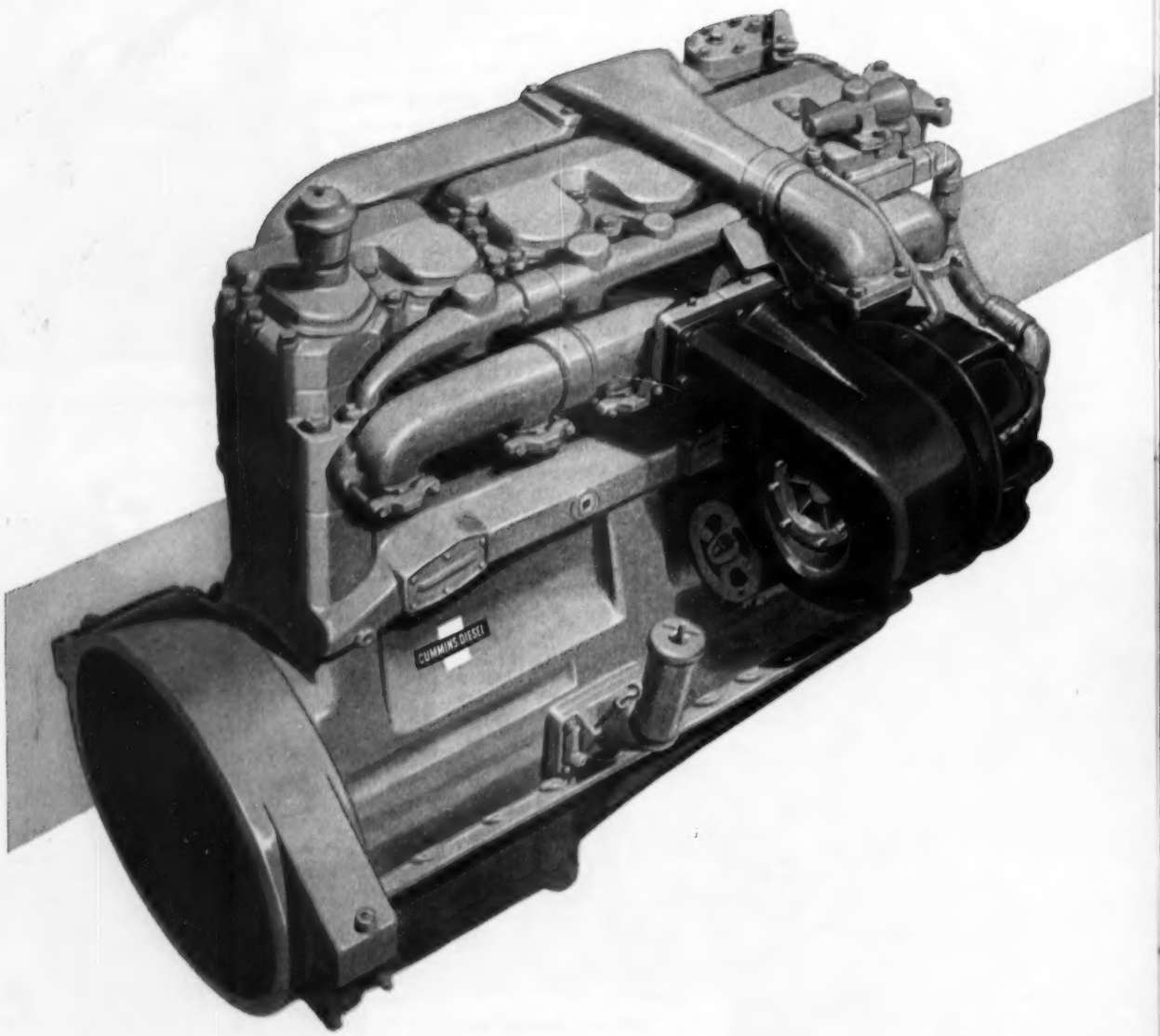
Left: More and more Pullshovels are being used for basement excavation.

Right: Cleaning out small ore pockets in mining work.

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

NEW *TURBODIESEL*



BY CUMMINS

ups your production

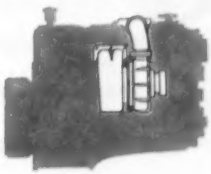
and lowers your costs!

Cummins new 250 h.p. turbocharged NT-6 can speed up haulage trucks, shovels, graders, tractors, and other construction equipment, because it produces greater horsepower without increase in engine size or displacement. Turbocharging—which harnesses exhaust gases normally wasted—produces this extra horsepower by achieving a more perfect air-fuel mixture in the combustion chamber.

In addition, Cummins exclusive PT fuel system is simple and trouble-free . . . makes fuel system maintenance costs negligible. It is so easy to work with that no specialists are needed. Fuel costs, of course, are kept at a minimum with No. 2 diesel fuel or furnace oil.

The NT-6 is also available with a torque converter that ups output even more by maintaining power without lugging, stalling, or overspeeding . . . and that reduces maintenance costs even more by eliminating shock loads on engine, machinery, and cables.

For the operator of Cummins 200 h.p. NH-600 models, a Turbodiesel Conversion Package will soon be available which will make it possible to add 50 h.p. to every unit. For further information, see the Cummins distributor in your area, or send us this coupon today.



Turbodiesel Conversion Package for NH-600 models includes turbocharger, new manifold, and gaskets.

CUMMINS

Cummins Engine Company, Inc.
Columbus, Indiana

Leader in rugged, lightweight, high-speed diesels (60-600 h.p.)

Cummins Engine Company, Inc.
Columbus, Indiana

Please send me detailed information on the Cummins developments checked below:

_____New NT Turbodiesels

_____Turbodiesel Conversion Package for NH-600 models.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

2 GREAT NAMES IN

join in the newest, finest portable

Cedarapids

Built by IOWA

● CEDARAPIDS . . . and SYMONS! Wherever there's crushing, those two names are synonymous with the best and most efficient equipment available.

Now, in these brand new Cedarapids-Symons Cone Crushing Plants, they are joined to give you a plant that combines the great mobility of Cedarapids portable design with the high capacity and low-cost operation of Nordberg-built Symons Cone Crushers.

The result is an aggregate producer's dream! A highly mobile, rugged plant that gives you big volume, low-cost finished crushing of even the hardest or most abrasive rock or gravel to the uniform, finely crushed aggregate required in so many specifications today.

COMBINE THESE

Cedarapids Portability . . . . . .

- *100% portability!* Easy to take down or set up . . . wheel right into position in the pit or quarry and start producing.
- Meets legal load limitations.
- Use of Horizontal Vibrating Screen permits lower over-all height.
- *Low maintenance* is another great Cedarapids advantage! Exclusive life-seal bearings on all troughing and return rolls, self-aligning bearings throughout, disc clutches, stress relieved screen box, free use of alloy steel, easy access for lubrication and service adjustments.

Use a Cedarapids Portable Primary with the Cedarapids-Symons Cone Crusher Secondary

A Cedarapids Portable Primary ahead of your Cedrapids-Symons Cone Crusher Plant increases production still more, especially in quarry operations. The big Cedarapids 3240 Portable Primary will crush from 150 to 300 tons of big quarry rock. The jaw crusher, with 1280 sq. in. jaw opening, will take rock up to 32" x 40" in size and quickly reduce it to 6" feed for the Symons Cone. Cedarapids Jaw Crusher Primaries are available in sizes from 15" x 24" to 32" x 40". Cedarapids Portable Primaries are also available with Double Impeller Impact Breakers for many quarry conditions.

CRUSHING KNOWN THE WORLD OVER

crushing plants ever offered!

SYMONS®
CONE CRUSHERS

Built by NORDBERG

● Built by Nordberg Mfg. Co., the Symons Cone Crusher is famous throughout the world as the most outstanding crusher ever developed for producing high tonnages of desirable fine-crushed product with the economy that puts more take-home profit in your pocket. It has been proved again and again on every type of job . . . from trap rock to limestone . . . for fast reduction of large size feed to a constant, uniform finished product.

Joining the big output of a Symons Cone Crusher with the high screening capacity of a Horizontal Vibrating Screen in this new Cedarapids Portable Plant gives you the best production features of a permanent installation, adds extremely low operating and maintenance costs . . . and puts it on wheels!

SYMONS . . .
A REGISTERED NORDBERG TRADEMARK

GREAT FEATURES

. . . . . Symons low-cost reduction assures uniformly fine-crushed products

- Controlled feed combined with high impact velocity and wide throw of the crushing head permits rapid flow of material and high ratio of reduction in crushing cavity.
- Maximum utilization of the crushing surfaces.
- Produces commercial aggregate from 6" down in one stage, with minimum circulating load.
- Wide adjustment for quick, positive product size changes.
- Requires much less power and liner replacement than other types of crushers.
- Working mechanism entirely enclosed for years of service with minimum maintenance requirements.

IOWA
MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

IOWA MANUFACTURING COMPANY,
Cedar Rapids, Iowa, U.S.A.

Gentlemen:

QUICK! Send me full information about the new Cedarapids-Symons Cone Crusher Plant.

Name_____

Company_____

Address_____

City_____ State_____

★ JOB TALK ★

...About Safety

These excellent safety thoughts were sent in by Gordon J. Paul, a civil engineering student at Montana State College. Mr. Paul came up the ranks in construction as laborer, machine operator, foreman and general manager for a contractor and almost 4 yr of service with the Seabees—before going to college.—Ed.

BASIC MACHINE handling practices should be reviewed when planning the safe use of heavy equipment. And management must play the first card in developing a safety-minded organization. Safety suggestions and rules become effective only when every supervisor, right up to the chief executive, is backing them.

Inexperienced Operators

Inexperienced or new operators assigned to equipment with which they are not familiar, should not be allowed to take over a full shift or a day's run on first assignment without passing through a partial day's work under direct and close supervision of an experienced operator. Many accidents have occurred with equipment in the hands of new men, who were not instructed sufficiently.

Fatigue

Many accidents are attributed to fatigue. Operations where great physical exertion is in effect, and especially where lack of alertness might injure the subject himself or his co-workers, should be studied by major executives. There is a definite relationship between accurate operating judgment and the mental and physical fatigue of an individual.

Authority for Safety Operating Orders

Many serious accidents could have been avoided if the operator of the equipment had acknowledged the signal of approaching danger from someone not in authority. Although an operator usually is reluctant to take orders from anyone beneath him in authority, he should be so fully aware of presence of danger that he is prepared to take preventive steps when warned by a bystander.

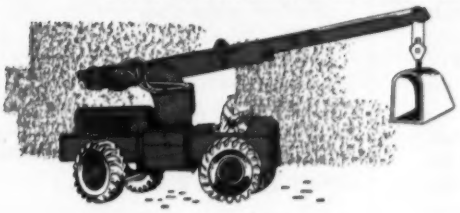
There have been instances where the operator has deliberately acted

(Continued on page 14)

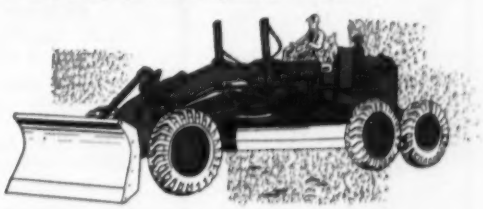
THIS JOB...
THAT JOB...
YOUR JOB...

A-W EQUIPMENT GETS IT DONE

Whatever the problem . . . whatever the job . . . those pictured above, or dozens of others, you can do it better with Austin-Western Power Graders, and the new tractor- and truck-mounted Hydraulic Cranes.



It's the LIVE BOOM that puts the A-W Hydraulic Crane out front in the performance parade . . . live power with instant response for all boom movements . . . extending and retracting, raising and lowering, and rotating. Fingertip hydraulic control handles delicate spotting jobs with superb precision. No other mobile crane has a boom so completely "alive" . . . no other outdoor-indoor crane will handle so many jobs, so well.



All-Wheel Drive provides 30% more Power-at-the-Blade; keeps the front end of the grader under control at all times. All-Wheel Steer makes the grader twice as maneuverable. Rear Steer shifts the rear truck from side to side, for better traction and smoother operation. The tougher the job, the more outstanding the performance of A-W "88" and "99" Power Graders in comparison with front steer, rear drive machines.

Austin-Western

Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes

BALDWIN BLH LIMA-HAMILTON

Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

JOB TALK . . . Continued from page 12

contrary to signals from a workman who saw approaching danger; this usually results in a serious accident. Signals from anyone should always be considered around moving machinery where hazards can be expected.

Operating

There are few pieces of equipment on which maintenance work should be done while the engine is running. An idling engine has more vibration than one under load. The vibration can partially throw in clutches, release safety pawls or, perhaps encourage the release of back-locking toggle clutches that may be supporting a load or holding part of the equipment in position.

Equipment Set in Motion

Any truck or crane that has been standing idle for any length of time on jobs where workmen are present in numbers should never be started in motion without some pre-arranged signal. Men working around such equipment may be frightened at the first movement and should be warned first by some set signals and then by a slight movement of the machine.

A carefully established plan of warning should be followed, by putting the responsibility for execution into the hands of an individual. Everyone should know who he is and look to him. Signal bells or horns have proved to be ineffective when they are used frequently and as the only means of warning. In such instances, warning contact arrangements are desirable; brush guards for example. Guard rotating members such as fans, open keyway shafts and similar moving parts.

Show-offs not Wanted

In all construction work where heavy equipment is in use, there are men who take pride in exhibiting their physical strength. Such men should be exposed to an educational program showing that exhibitions of this type are not appreciated by their co-workers and often result in the injury of an innocent person. Men referred to as "show-offs" are men who usually don't know how to exercise good judgment. Good judgment is less spectacular.

Flashlight vs Finger Feels

In maintenance work around

(Continued on page 20)

Down time gives anyone the freezin' fidgets. Best way to avoid it is to insist on genuine CAT* parts every time. That's the only way to be sure of getting parts that are made to the latest design, precisely manufactured of the right materials, rigidly inspected and tested.

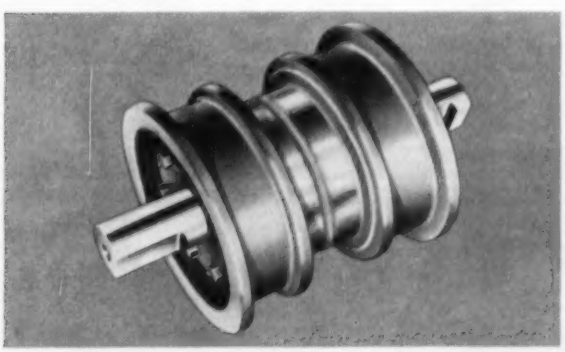
Take track rollers, for example

Some makes of track rollers may look alike—at first glance. But look closely at a genuine Cat roller: deep-hardened forged steel rims, center welded to prevent spreading . . . one-piece shaft . . . cast iron hub of high compressive strength to lessen bore distortion . . . specially alloyed bronze bearings . . . shaft wearing surfaces "Hi-Electro" hardened. With a substitute roller: who can be sure?

The difference on the job: with genuine Caterpillar-built track rollers you get extra trouble-free hours of profitable production, and top performance in even the worst working conditions.

With substitute parts: who can be sure? **Better get genuine Caterpillar parts every time.**

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.



CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

One of Nevada's biggest highway builders uses TEXACO SIMPLIFIED LUBRICATION PLAN

ISBELL CONSTRUCTION COMPANY, Reno, Nevada, not only is one of the state's biggest highway builders but does open-pit mining for some of Nevada's great copper mines. Operations on such a scale naturally call for millions of dollars' worth of equipment. To protect this huge investment, Isbell uses the Texaco Simplified Lubrication Plan because, the company says—

"With the Texaco Simplified Lubrication Plan we can handle all major lubrication with a minimum number of products. That keeps lubricant inventories low, reduces the chance of making lubrication mistakes, saves us time and expense on maintenance. And the smooth functioning of equipment is a big help in keeping our jobs on schedule."

Follow The Texaco Simplified Lubrication Plan

Contractors throughout the country find this unique plan eliminates lubrication errors, saves time and money. All major lubrication can be done with *not more than six* Texaco Lubricants:

1. Engines: Diesel and heavy duty gasoline engines run better when lubricated with one of the famous *Texaco Ursa Oil* series—a complete line of lubricants especially refined to make engines give *more power* with *less fuel* over *longer periods* between overhauls.

2. Chassis: Get longer lasting protection with *Texaco Marfak,* the lubricant that won't jar or squeeze out, that protects against dirt, rust and wear. *More than 555 million pounds of Texaco Marfak have been sold.*

3. Wheel Bearings: They last longer when lubricated with *Texaco Marfak Heavy Duty.* It seals out dirt and moisture, seals itself in—assures safer braking. No seasonal change required.

4. Crawler Tracks: Assure longer service by lubricating with *Texaco Track Roll Lubricant,* an effective guardian against dirt, water and wear.

5. Air Compressors: Clean and efficient operation is assured when you use the Texaco air compressor oil especially recommended for your particular operating condition.

6. Rock Drills: Get better protection against wear and rust with *Texaco Rock Drill Lubricant EP.*

Let a Texaco Lubrication Engineer help you simplify and improve your lubrication procedures. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

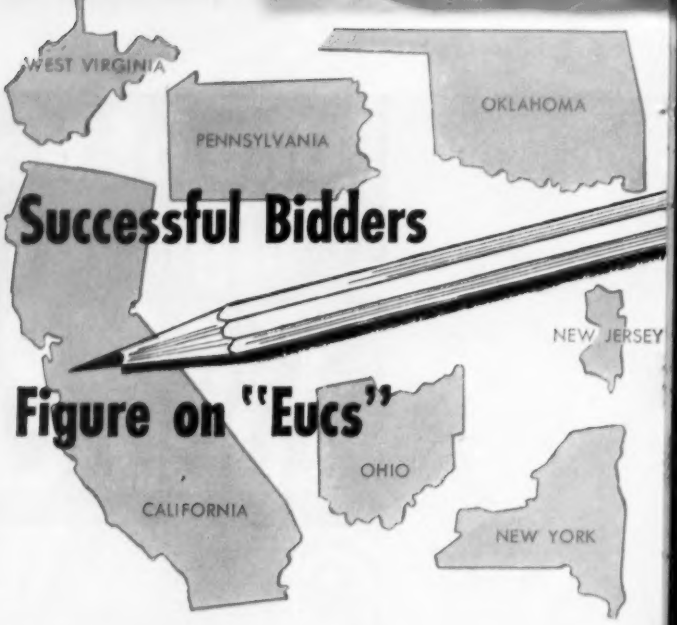
FOR ALL CONTRACTORS' EQUIPMENT

NEW YORK THRUWAY—more than 500 "Eucs" of all types—Rear-Dumps, Scrapers, Bottom-Dumps and Loaders helped rush many sections of this 427 mile road to completion.

WEST VIRGINIA TURNPIKE—probably the most rugged test of equipment on all turnpikes to date because of the rocky, mountainous country. Of 275 off-highway rear-dump trucks used on the job, 260 of them were "Eucs".

CALIFORNIA—Euclid equipment has played an important part in building many of the modern super highways in the West. The "Euc" Scraper shown here is working on the Los Angeles Golden State Freeway.

OHIO—Bottom-Dumps and Euclid Loaders dominated the construction scene on the Ohio Turnpike. "Eucs" outnumbered all competitive rubber tired earth moving equipment by better than 4 to 1.



Successful Bidders

Figure on "Eucs"

On almost every section of every turnpike project there's been mighty keen competition for the jobs—usually 10 or more bidders. When your competitors are using "Eucs" to move dirt or rock faster and cheaper, you just can't afford to pass up the cost-cutting advantages of Euclid equipment. That's why successful bidders on hundreds of earth moving projects base their estimates on the production performance of Euclids.

Money-making performance on all types of work is proved by the fact that over 60% of all Euclid equipment sold is repeat business from satisfied users.

FOR TOUGH ROCK JOBS...

and other heavy excavation, Rear-Dump "Eucs" are the logical choice as they were on the West Virginia Turnpike by more than 9 to 1. Capacities range from 10 to 50 tons with engines of 125 to 600 h.p., with some models equipped with Torqmatic Drive.

FOR BIG YARDAGE PRODUCTION...

the Loader and Bottom-Dump combination has no equal for high speed loading and hauling of earth and free flowing material. Bottom-Dumps have struck capacities of 13, 17 and 25 cu. yds. with loaded top speeds up to 35 m.p.h.

FOR SCRAPER JOBS...

big or small, there's a complete line with struck capacities of 7, 12, 15.5 and 18 cu. yds. High production and dependable job availability of "Euc" Scrapers has made them the fastest growing line in the industry. The "Twin Power" Scraper shown at the left has exceptional versatility—it's been a one-man earth moving spread on lots of jobs!

There are lots of reasons why the men who know equipment use "Eucs" but they all add up to this simple fact:

EUCS MOVE MORE LOADS PER HOUR AT THE LOWEST COST PER TON OR YARD

It's "Eucs" on the Indiana Turnpike now!

First contract on the Indiana Turnpike covering a 7.4 mile section was awarded to Rieth-Riley Construction Co. Grading is being done by Chapin & Chapin of Norwalk, Ohio—over a million cubic yards are to be moved. In the photograph, one of a fleet of 8 Euclid 15.5 cu. yd. Scrapers is shown working on an overpass northwest of South Bend.

Euclid equipment was used by most of the contractors who built our first super road — the Pennsylvania Turnpike — more than 15 years ago. Since that time "Eucs" have been the choice of contractors for grading work on just about every super-highway project from Maine to California.

The new Indiana Turnpike is no exception—Euclids will be used on nearly all of the grading contracts awarded to date. In fact, "Eucs" already outnumber competitive rubber tired equipment by a wide margin and many more will go to work when the job moves into high gear.

Men who bid these big jobs can't gamble on the selection of equipment — they have to play it safe with machines they can depend on to do the most work at the lowest overall cost. Even if you don't bid on these big projects, the same dependable low cost performance of "Eucs" can mean more profits — and more jobs — for you. Call your nearby Euclid dealer for help with any earth moving problems — he's at your service to help you make more money on every job.

"Eucs" paid off in performance on all of these toll road projects:

NEW YORK THRUWAY
PENNSYLVANIA TURNPIKE
NEW JERSEY TURNPIKE
MAINE TURNPIKE
OKLAHOMA (TURNER) TURNPIKE
WEST VIRGINIA TURNPIKE
OHIO TURNPIKE

and on other highway jobs all over the world.

EUCLID DIVISION
GENERAL MOTORS CORPORATION, Cleveland 17, Ohio
Cable address: YUKLID

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GENERAL MOTORS

JOB TALK . . . Continued from page 14

heavy equipment it is necessary, in many instances, to insert certain sections in a fitting point that cannot be seen easily because of darkness. Common practice is to find this point by the insertion of the hand or fingers to guide such pieces into proper alignment. This too often results in the loss of fingers and arms. A flashlight should always be within reach of the workmen. When it is absolutely necessary to insert fingers in this manner, the machinery should first be so blocked that it cannot move.

Periodic Inspection

Scheduled periodic inspection of suspension cables, ratchet pawls, slings, chains, brakes and control linkages is a vital safety procedure on any job.

Time spent in developing a truly safety-minded organization fully acquainted with safe conduct practices, pays dividends not only in more efficient and profitable work, but also in improved employee morale.

Makes Ditching A Profit Item

Teaming up a Model D LeTourneau - Westinghouse Tournapull and a Caterpillar No. 12 motor grader, State Contracting & Stone Co., Hartford, Ky., works a cost-cutting method of cutting ditches and building shoulders on its black-topping contracts on county roads.

The grader cuts ditches and casts the material on the shoulders and road edges. Where an excess of material exists, it is self-loaded by the Tournapull and spread across a low spot where fill is required. The Model D can load right off the new asphalt pavement, if necessary. When extra material has to be brought in, it usually is loaded from some spot along the right-of-way and spread where needed.

Where not enough extra dirt is available, the contractor has found it easy to arrange with a near-by farmer to dig a stock-pond (at no cost to the owner) in exchange for the material excavated. On a recent 12-mi job, this arrangement resulted in the building of a good-sized lake—to the satisfaction of all concerned. The combination averages one mile of ditch and shoulder per day. Robert Hudson, president of State Contracting, says that ditching work can be a profit item, instead of a break-even chore

MAKE ANY CUT
...IN SECONDS
...with your

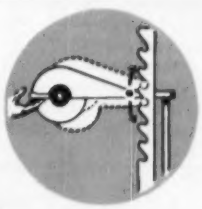
Clipper "SAILS RIGHT THRU"® **MASONRY SAW**

SIMPLE in operation
RUGGED in construction
DEPENDABLE in performance

Only Clipper Gives You Every Feature Needed for Fast, Economical Cutting!

Simple Cuts — Intricate Cuts —Every Size or Type Material!

SELECT-A-NOTCH



It's easy for one man to adjust cutting head—to desired height for cutting any size material. Weight of head is supported by connecting bar. Clipper's deep-seating Notches always guarantee true cutting head alignment—assure maximum blade life and increased production. Clipper patent.

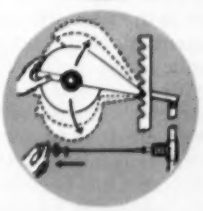
PRESSURE EQUALIZER

Makes blades last longer because Equalizer Spring automatically cushions blade pressure. A Clipper patent.

WET or DRY PUMP

Just turn valve to change from wet to dry cutting. Factory-attached—no loss. Factory-sealed bearings—no maintenance. Clipper's patented Water Application supplies water to the cutting edge—just where it should be—for longer blade life and control of dust.

ADJUST-A-CUT



Merely pull knob for finger-tip setting of cutting head angle above material. Release knob to lock in desired position. A Clipper patent.

HEAD LOCK

Just turn the handle to lock cutting head for fixed Diamond Blade cutting. A safety lock when transporting saw as a unit. Patented by Clipper.

Just 5 of 22 Reasons —

4 OUT OF 5 BUY CLIPPER!

Cut faster and more economically, save time and materials—make your jobs look better and return more profit—with a Clipper Masonry Saw! Clipper made the world's first masonry saw, nearly 20 years ago . . . Clipper makes the world's finest masonry saw today. Let Clipper's famous 5-DAY FREE TRIAL prove it to you!

Mr. Clipper

FOR BEST RESULTS—USE CLIPPER BLADES

For lowest possible cost, look for the bright orange centers which identify genuine Clipper Superior Blades. Manufactured under rigid controls, assuring you consistent quality and peak performance, from rim to stub. Clipper alone supplies THE specification for ANY material—Wet Abrasive Blades—Dry Abrasive—Diamond—"CBR" Break-Resistant Abrasive.

BUY THEM IN QUANTITY FOR EVEN GREATER SAVINGS!

NEW PROFITS CUTTING CONCRETE!

Self-propelled*, and powered for heaviest duty. ONLY CLIPPER offers you the combination of 4 wheels and 3-point, no-bind blade suspension—the only design that cuts a straight line, minimizes blade binding and breakage. Saw is easily maneuvered by one man, whether lining up for the cut, or over the curbs. The ONLY SAW with EVERY Feature demanded of a Concrete Saw.

***Optional feature—All Clipper Models also available without self propelling unit.**

25 H.P.
MODEL C-250
ONE OF 7 MODELS
FROM $395

WORLD'S LARGEST MANUFACTURER OF MASONRY AND CONCRETE CUTTING EQUIPMENT

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It's Your Business . . .

Get the Most Out of Your Equipment Buying Policy*

Faster Writeoffs and More Realistic, Easier Financing May Change Your Buying Habits

NEW THINKING has brought sudden changes in the "whys" and "hows" of equipment buying which soon may be pressuring contractors to re-examine their equipment purchasing habits. Contractors taking full advantage of these new developments may improve their competitive position substantially and boost their profits.

This is particularly true of smaller contractors who have little experience or who have no specialist on the economic and accounting problems involved in making their equipment investment pay the highest returns. These are generally the firms which could benefit most from the new ways to conserve working capital and taxes.

In this first of a series on investigations into how the new tax law revision of 1954 and new financing plans are affecting equipment buying policy, it is appropriate to start with the new faster depreciation allowances permitted by the government. The April 15 income tax deadline is close at hand and it's time for contractors to get together with their accountants and decide on depreciation policy for the 1954 tax year. Furthermore, these decisions will depend in part on contractor plans for 1955 and later.

More Business Best Stimulant

Joseph M. Landow of Franklin Square, Long Island, N. Y., who is a CPA and attorney specializing in taxes, believes that a 5% increase in volume of work available would have more effect on equipment buying than the advantages of the new tax law. This is because in actual practice contractors do not make full use of the benefits provided.

He finds that contractors often seek justification for buying after they've already purchased the new equipment.

He classifies his contractor clients into three groups. The first two are engineer-contractors whom he divides into the "economist" and the "slide-rule" types. The third group includes the "machine-happy" contractors.

The "economist" engineer-contractor has good business sense, makes money and buys equipment when it is economically justified. The "slide-rule" contractor is an expert on costs down to the last detail, but he lacks the business "feel" and, as a result, he has trouble coming up with winning bids. This makes him a conservative equipment buyer. In contrast, the "machine-happy" contractor buys new equipment just because he wants to own it, even though from a business standpoint the machine is not economically justified. Sometimes only a cash shortage or inability to get financing can defeat this contractor's urge to buy.

Needs a Sparkplug

This same accountant believes that contractors in general have failed to sense their responsibility in finding out how faster write-offs could aid them in their equipment buying.

Too often in the past, the contractor has relied upon his accountant alone to set up depreciation policy. But this policy involves two types of decisions: the accounting decision and the business decision, such as the contractor's plans for the future.

While it's true that in some cases the accountant through long association with his contractor client's business problems has been making business decisions for him, the contractor himself is in the driver's seat and the best judge of where he's going to turn next.

Because of habit, some contractors now expect the tax accountant to pick up the ball and figure out under the new law what's the best depreciation policy from both the accounting and the business standpoints. But until the contractor takes the initiative, or, unless his accountant becomes the sparkplug, the new depreciation will have little effect on equipment buying. *(Continued on page 26)*

New Financing Plans Geared to Faster Depreciation

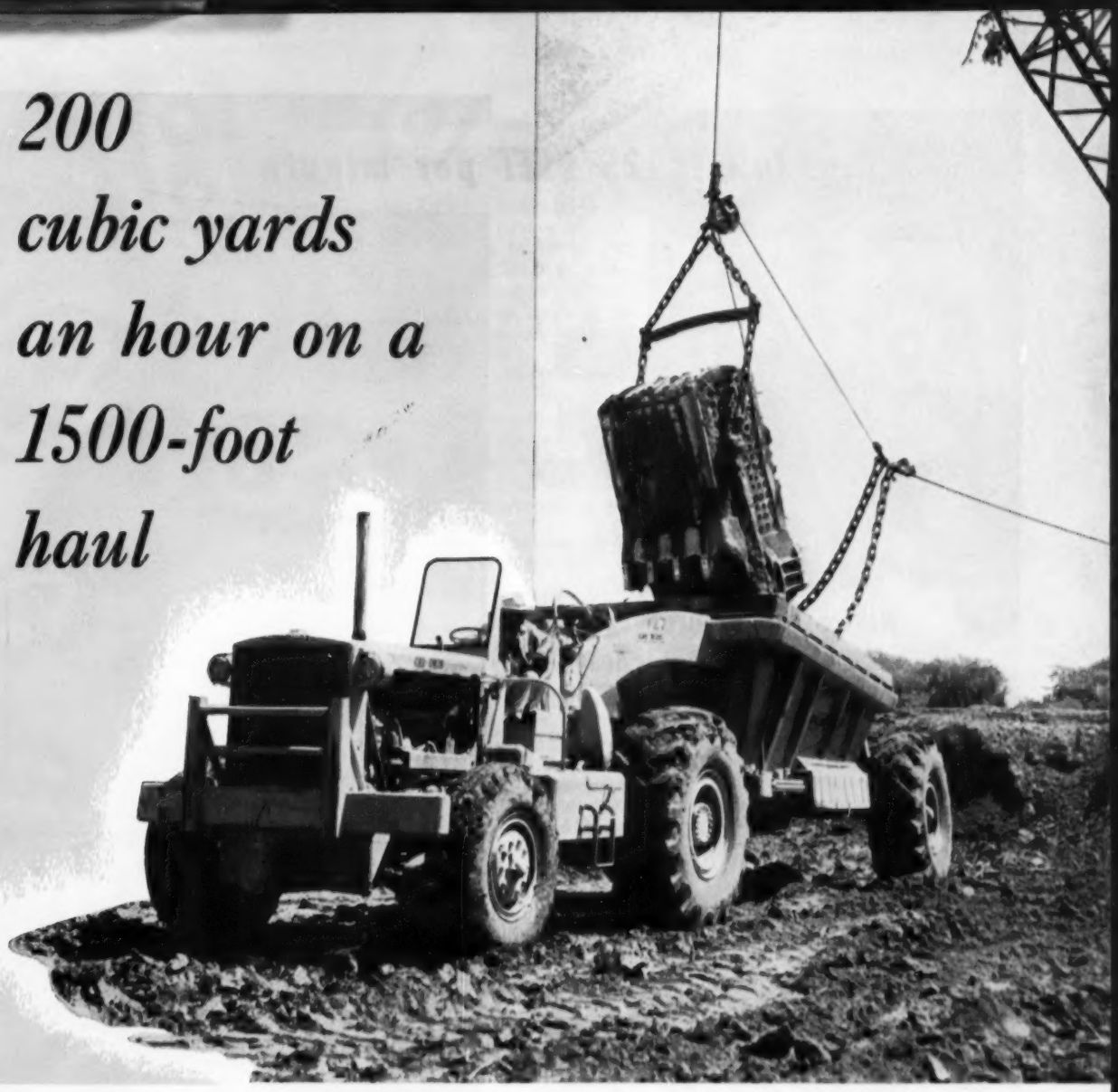
• Much of the credit for publicizing the new faster depreciation allowances goes to manufacturers, finance companies and banks. The faster writeoffs have caught the fancy of such firms as: Clark Leasing Co., equipment financing subsidiary of Clark Equipment Co.; C. I. T. Corp., biggest single source of equipment financing; and the Franklin National Bank of Franklin Square, N .Y., which finances equipment sales in 11 states.

Their new financing plans gear contractor payments to the "sum of the digits" (CM&E Sept. '54, p 18) which is one of the faster writeoff schedules now allowed. They have the common purpose of making financing easier for the contractor by making it cheaper, lengthening the re-payment period or reducing down payments.

However, they would take the contractor's tax saving—where he uses this faster writeoff method—as fast as he makes it so that he loses the advantage of building up his working capital during the early life of the equipment.

* This is the first of several articles to appear on this page in 1955 discussing equipment buying policies for contractors. CM&E is exploring current practices on the "working level" among contractors, manufacturers and dealers, financing institutions and tax accountants. Here are suggestions valuable to anyone planning a purchase.—Ed.

200 cubic yards an hour on a 1500-foot haul



Cat® DW20 Tractors and W20 Wagons are key units in the earthmoving spread of Geo. Bennett Construction Co., Kansas City, Kansas.

Loaded by the dragline, one of these machines handles 18 cubic yards of material and makes 11 to 12 quarter-mile round trips to the fill per hour. On a construction job near Turner, Kansas, three DW20-W20 units moved 25,584 yards of earth in five working days.

The Bennett Co. also has Caterpillar DW21s, D8s, D7s and Scrapers in its big yellow fleet. Mr. Bennett says: "I have been using Cat machines since 1920. They've been tough and rugged and have held up better than any competitive product I know of."

The fast-moving DW20 Tractor, with its 225-HP Caterpillar Engine, furnishes perfectly matched power for the W20 Wagon. The wagon itself is built to outperform and outlast any other hauling unit in its class. It's engineered for the job, with weight evenly distributed between tractor and wagon tires. Hydraulic ram dumping gives the operator accurate control. And the generous size of the hopper offers a good target for the shovel.

Get actual production figures from your Caterpillar Dealer, nearby for information and service. He'll demonstrate right on your job, where you can compare cycle times with other equipment. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

Digs up to 25 FEET per minute

Notice the accurate grade you get with this Parsons 150 wheel-type Trenchliner

For pipeline, drainage, irrigation and utility trenching, Parsons 150 Trenchliner brings you big work capacity and precision grading accuracy. It digs from 12 inches to 25 lineal feet of trench per minute. 30 digging feeds assure maximum trench production at every depth, width, and in all soil conditions. Cutting widths range from 16 to 26 inches. Maximum digging depth is 5¾ feet.

Hydraulic wheel-hoist gives smooth, positive control of trench depth. A hydraulic ram on vertical mast raises and lowers the digging wheel — maintains close grade tolerance, an important advantage on any trenching job. A separate hydraulic ram tilts the mast — balances weight of wheel forward on the machine when traveling, loading or unloading on trailer.

For digging dry or wet materials, quick-change buckets on the Parsons 150 Trenchliner are available with gumbo lips, or self-sharpening reversible "Tap-In" teeth. Shiftable, reversible belt conveyor gives controlled discharge, places spoil bank on either side of trench. Tile-laying box and chute (optional) save time and labor on drainage jobs. To suit varying job conditions, this 150 Trenchliner is also available with 16-inch, lug-type crawlers, or 12-inch crawlers with street shoes. Your Parsons distributor has more information that will interest you. See him soon, or write for bulletin.

. . . . Send to: **PARSONS CO.**, Newton, Iowa . . . .

for bulletin on 150 wheel-type Trenchliner

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PARSONS TRENCHLINERS®

5 OTHER SIZES Parsons Trenchliners include wheel and ladder types, crawler-mounted, and utility-size rubber-tired Trenchmobile®

Hauls 1-ton load in gravity-dump hopper

New Kwik-Mix R15 Moto-Bug® carries 2,000 pounds of any bulk materials in 15 cu. ft. hopper, or on 34x54-in. platform. It travels 6 m.p.h. forward and reverse, climbs 16% grades fully loaded, has 550 pounds drawbar pull for towing. Turning radius is only 73 inches; overall width is 35 inches. R-15 Moto-Bug can be equipped with 7-foot fork lift. Smaller 10 cu. ft. Moto-Bug with 34x48-inch platform and 6-foot fork lift also available.

KWIK-MIX • Milwaukee, Wis.
(Koehring Subsidiary)

Central cement feed prevents "gumming"

With concentric arrangement of aggregates around cement in the Johnson Concentric Batcher, all ingredients are intermingled as they flow through discharge. Reduces dusting, pre-shrinks materials. Cement is weighed individually on precision-beam scale; aggregates on accumulative dial scale or individual beam scales. Johnson Concentric Batcher sizes: 2 to 8 cu. yds., arranged for 2 to 8 aggregates, 1 to 4 types of cement.

C. S. JOHNSON • Champaign, Ill.
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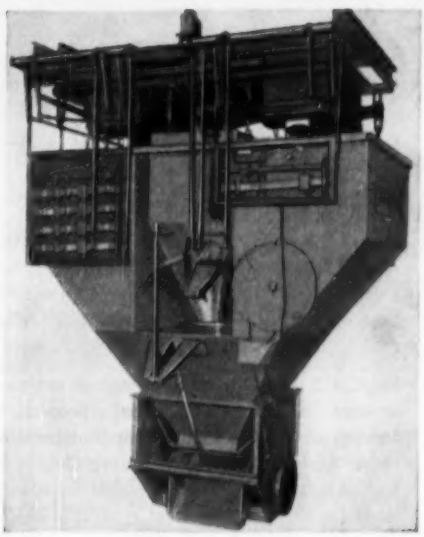


Compare Koehring 205 with any other ½-yard

Crowd, swing, boom-hoist and retract clutches on Koehring heavy-duty 205 are among the largest used in the ½-yard class. Powerful cable crowd and electric push-button dipper trip maintain fast dig-and-dump cycles. Automatic traction brakes simplify operation, lock and hold the 205 when working or parked. *Work capacity:* ½-yd. shovel or hoe; ½ to ¾-yd. clamshell or dragline; 10-ton lift crane on crawlers; 15-ton truck crane.

KOEHRING Company
Milwaukee 16, Wis.

T62

IT'S YOUR BUSINESS . . .

Continued from page 22

Up to You

How much the new depreciation allowances can save you, the individual contractor, or help you to conserve working capital in these days of close bidding and narrow profits depends on several factors.

If your judgment is that business—and profits—will grow during the next few years, you may be better off by stretching out depreciation rather than taking it fast. This way you can apply the maximum depreciation to years when profits are highest.

The amount of tax savings depends on the type of equipment, its cost, time of purchase and whether you trade in, sell or junk your old equipment. You also have the advantage under the new tax law of shifting from one depreciation method to another.

On the other hand, you may find it will pay you to buy a used machine because you can justify a shorter life expectancy and also write it off almost as fast as a new machine.

It's up to you to huddle with your accountant if you're going to get the most out of the new faster tax writeoffs.

Slow Contractor Reaction

Since the faster depreciation of new construction equipment allowed by the 1954 tax law revision was announced, contractors have been slow to react.

The new law encourages contractors to buy new equipment by permitting them to recover their investment faster and thus free working capital sooner than they could under the rapid depreciation allowed by the old law. But some never got the word, others were misinformed, and still others lacked enthusiasm or the initiative to find out how the new law could help them.

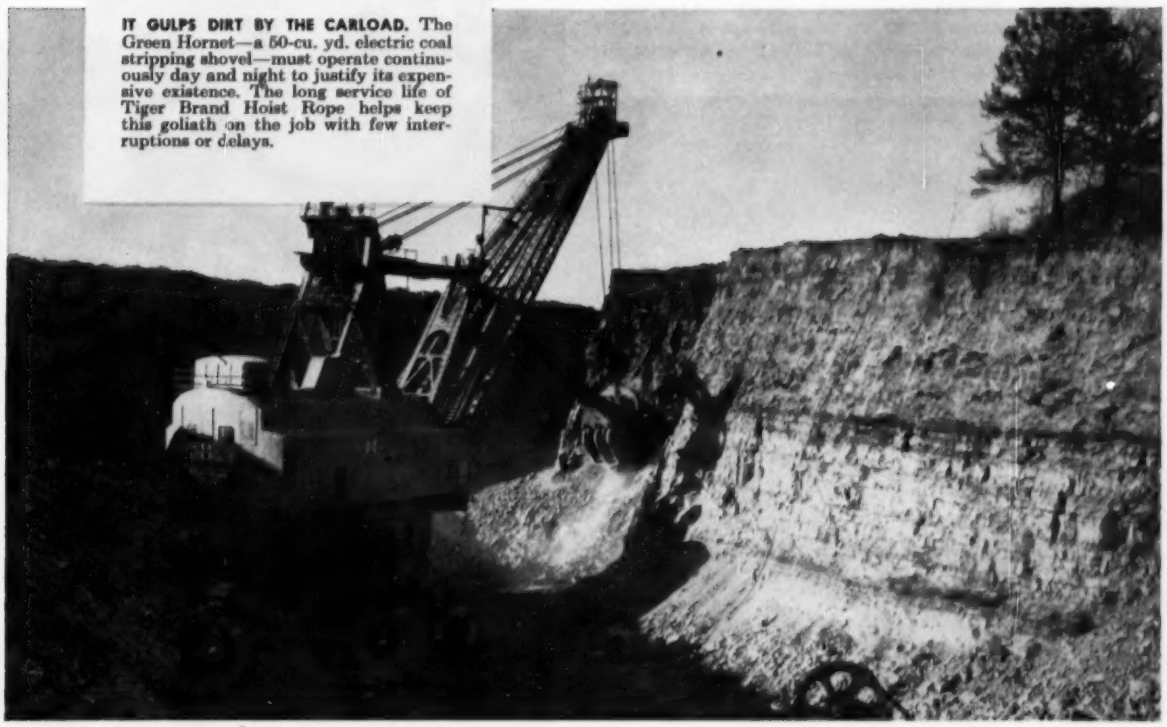
Low Profit Margins

While the new faster write-offs can save contractors money, these savings can come only out of profits after taxes. But profit margins have been taking a beating since 1953 because of sharply increased competition and tight bidding.

The same situation is expected to continue in '55, even though new business is coming along at a fast rate. The tremendous growth in

(Continued on page 30)

Over A Million Yards of Tough Digging *with ONE Tiger Brand Hoist Rope*



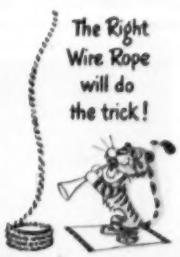
IT GULPS DIRT BY THE CARLOAD. The Green Hornet—a 50-cu. yd. electric coal stripping shovel—must operate continuously day and night to justify its expensive existence. The long service life of Tiger Brand Hoist Rope helps keep this goliath on the job with few interruptions or delays.

THE first Tiger Brand Hoist Rope installed on this coal stripping shovel worked 65 shifts in 23 days before it was replaced. It moved 1,161,155 cu. yds. of overburden in those three weeks.

That's good service in a punishing coal stripping operation. This big 50-cu. yd. shovel is busy every hour of the day and night, stripping overburden for Hanna Coal Company at Georgetown, Ohio. It averages as high as 54,000 yards a day. Its hoist rope really has to be *rugged* to work at that clip. The first Tiger Brand Rope worked so well that an identical Tiger Brand Hoist Rope replaced it.

This is not a unique case. We know of many Tiger Brand Ropes on heavy-duty earth moving equipment that have moved a million or more yards before replacement. In cases of easier digging, service in excess of 2,000,000 cubic yards is not unusual. On *any* job, the correct Tiger Brand Rope gives you the longest possible service . . . steady, rope-after-rope performance that *keeps down costs.*

Send the coupon for more information on Tiger Brand Wire Ropes.



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Please send me, without obligation, a copy of your helpful wire rope selection guide, "The Right Rope for the Job."

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USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

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UNITED STATES STEEL

DAM FOR CORDRY LAKE, 700 feet thick at the base, is built by this fleet of three INTERNATIONAL TD-18A crawlers and scrapers and one INTERNATIONAL TD-14A with hydraulic dozer used for push-loading on inclines and in soft spots, and some other equipment.

LAKE LEAKAGE is eliminated by removing all porous soil and stone from the site of the dam base and replacing it with impervious clay fill from distances up to 1,000 feet from a nearby hill.

BUILDING UP THE DAM BASE moves along on schedule as one of three TD-18A scraper combinations brings a heaping load of clay to the construction site.

Moves 1,000,000 cubic yards to build a lake

Howard Prince, veteran Indiana contractor, has used INTERNATIONAL crawlers to build more than 100 lakes since 1935—and he has two large lakes under construction right now!

A water shortage is being remedied and a new vacation area opened by a chain of fourteen lakes being built across Brown County, Indiana, by veteran lake builder Howard Prince, head of the Prince Lake Building Company, Nineveh, Indiana.

Latest and largest in the chain is Cordry Lake, the 103rd lake to be built by Prince.

Cordry Lake, which will eventually cover more than 600 acres, is being created by building a dam 750 feet long, 120 feet high, across two small streams. In excavating unsuitable material from the dam site and borrowing leakage-proof clay from a nearby hill, the lake builders will move over 1,000,000 cubic yards of dirt.

The entire job is being handled by Prince's fleet of seven INTERNATIONAL crawlers with matched IH scrapers and blades, and some other equipment.

Howard Prince has been an INTERNATIONAL owner ever since he first started in business, and states: *"I bought my first* INTERNATIONAL *crawler in 1935 and I've been using them ever since.*

"I've been increasing my INTERNATIONAL *equipment until I now have three TD-18As with scrapers, two TD-14As with blades, a TD-9 and two TD-6s on this job.*

"On lake building projects, as well as all other types of work, they have proved both dependable and economical through the years."

Get the same information that has enabled this successful contractor to make such wise equipment buys for 20 years. Call your INTERNATIONAL Industrial Power Distributor today. From the world's most modern line of earthmoving equipment he'll select the machine "right" for your job and demonstrate it on your job any time you say.

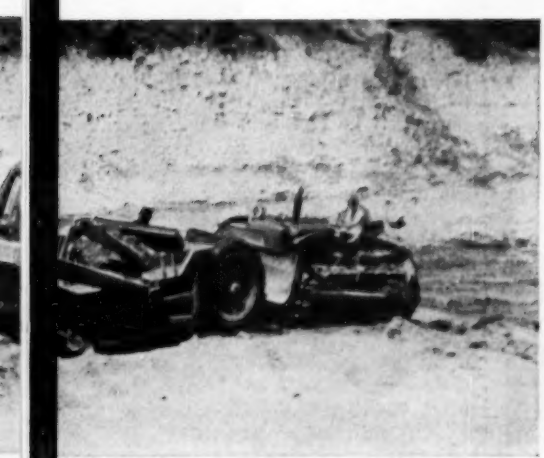
INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

INTERNATIONAL HARVESTER

INTERNATIONAL INDUSTRIAL POWER

MAKES EVERY LOAD A PAYLOAD

REMEDY FOR NATURE'S OVERSIGHT. The Brown County Lake Development project is adding immeasurably to the natural beauty of that Hoosier county by building 14 lakes in an area that has all the scenic wonders except lakes.



IT'S YOUR BUSINESS . . .

Continued from page 26

contractor capacity could easily absorb the 8.5% increase in heavy construction outlook for this year by CM&E. With the profits outlook for this year following the '54 pattern, contractors have trouble rustling up enthusiasm for increased tax-saving opportunities.

Construction Contracts to Rise 8.5% in '55

Contractors will have the second highest year on record in 1955 heavy construction contracts. CM&E is upping its preliminary forecast for this year's new business from $15.2 billion (CM&E October '54, page 24) to $15.6 billion. This will be 8.5% higher than '54 and slightly below 1952's record $15.7 billion, of which large atomic energy plants accounted for a whopping $2.3 billion.

Private construction is expected to climb 7% this year to a new high of $8.7 billion. State and municipal volume will increase to $5.6 billion, 12% more than the '54 record. Federal awards are forecast at $1.4 billion, 9% above '53, but far below 1952's record $4.5 billion.

New highs in '55 are predicted for: highways, up 23% to nearly $2.4 billion; commercial building, up 7% to $1.5 billion; private mass housing, 4% higher to $4.4 billion; and waterworks, up 2% to $250 million.

The '55 forecast for other major types of heavy construction: sewerage, up 6%; bridges, up 3%; earthwork and waterways, up 40%; public buildings other than housing, up 6%; public housing, down 10%; and private industrial building, up 6%.

The reason for the higher final estimate for this year was the fast rate at which new work was proposed during the final quarter of last year. This continued the trend of the first nine months and brought to $15.6 billion the total estimated cost of all projects reported proposed during 1954. Last year was the first since CM&E began in 1943 to gather reports on heavy construction projects as they are proposed that their estimated cost topped $1 billion during every month of the year.

As of December 31, 1954, the total backlog of heavy construc-

(Continued on page 201)

PATCH roads, streets, and runways the most economical way.

PATCH with permanent hot mix.

PATCH in all seasons with dried, heated aggregate.

PATCH with the machine that produces **all** mixes (including low slump concrete).

PATCH with the mixes produced on the job site or in a convenient central location.

Only the Mixall has . . . Rotary-drum dryer . . . Twin-shaft pugmill . . . Drying and mixing, independently controlled . . . Low charging skip . . . High discharge.

PATCH

Let us show you how the Mixall can reduce your costs.

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cost studies . . . nearby job inspection . . . plant layouts

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SCAFFOLDING SYSTEM

Offers you all these benefits!

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- SAVES TIME
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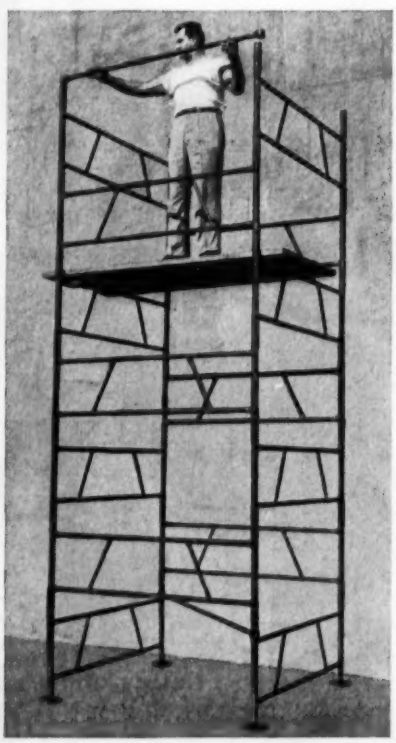
EXCLUSIVE SLIP-FIT SPEEDS MASONRY CONSTRUCTION

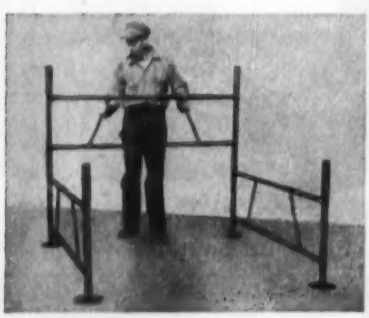
● With Brainard Scaffolding masonry contractors complete work on schedule—save vital time on the job in assembly and disassembly.

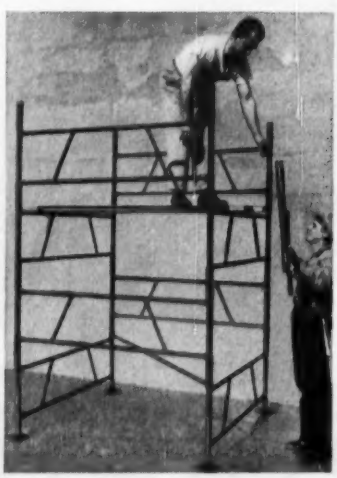
This new system is simple and fast. It has only one basic part—a lightweight tubular steel frame. Unique slip-fit design is the key to its amazing speed of erection. By simply slip-fitting frames together, towers of any height can be speedily erected . . . for example, a 14 foot tower can go up in less than 3 minutes. No nuts, bolts or pins are required. No tools are necessary. When lengths of scaffolding are needed, towers are simply tied together with tie bars to provide continuous runs . . . to any required length. A full range of masonry jobs can be covered with only a few frames and accessories. Load tested at 300 pounds per square foot of planked area.

For complete information, write today to Brainard Steel Division, Dept. C-2, Griswold Street, Warren, Ohio.



FROM START TO FINISH ...IT'S THE EASY WAY UP!





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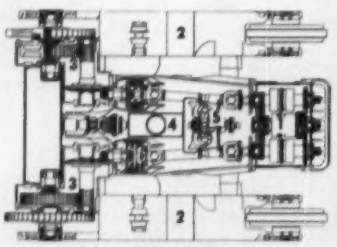
SHARONSTEEL
STEEL DIVISION
SHARON STEEL CORPORATION

SCAFFOLDING • PALLET RACKS • BUILDING PRODUCTS • COMPLETE STRAPPING SYSTEMS & MATERIALS • WELDED STEEL TUBING • ELECTRO-GALVANIZED STRIP STEEL

Offices in principal cities throughout the U. S.

Dependable Husky Unit Construction



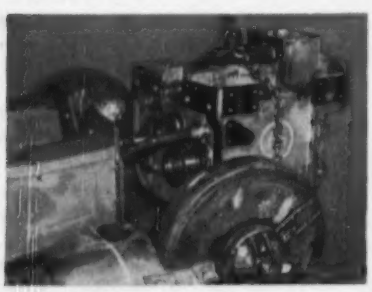
Eimco's self-contained unit construction allows maintenance or removal of each separate assembly without disturbing other assemblies of the tractor. (1) Transmission, (2) Track Assemblies, (3) Final Drive Assemblies, (4) Engine, (5) Torque Converter.

Transmission is a complete self-contained unit which can be removed without disturbing any other of the Tractor assemblies. This transmission contains all of the gearing and clutches for speed changes and reversals. There are no parts in the transmission that require adjustment or routine maintenance.

Eimcos put in your pocket

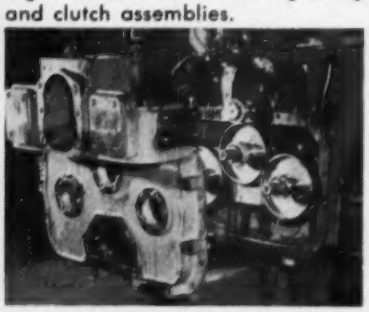
The complete gear train, bearings and clutches run immersed in oil. The gears are in constant mesh and the clutches are of all-metal parts and never need adjustment.

After thousands of hours of heavy service, clutch plates and gearing inspected in Eimco transmissions show little, if any, wear. Under normal conditions Eimco transmissions should run for years before needing overhaul.



When transmission repair is necessary the complete transmission assembly can be removed without disturbing any of the other major tractor assemblies.

If desired, the transmission housing may be left in place and the front cover easily removed, exposing all of the transmission gearing and clutch assemblies.



The Allison **torque converter** between the Diesel engine and the transmission reduces the shock on the transmission and engine to one-fourth the shock of conventional drives. Transmissions last at least five times as long and engines require overhaul at least one-third less frequently.

Removal of the torque converter or the complete engine and converter is also easy. It is not necessary to remove any of the other major assemblies.

There is no master clutch on an Eimco Tractor. The torque converter takes the place of the master clutch and allows smooth control with only the foot throttle.

The Eimco Tractor is the only crawler tractor without a master clutch. The major expense of adjusting and replacing master clutches is completely eliminated.

Eimcos put in your pocket

Final drive assemblies are husky and simple. The Eimco final drive has been built strong enough to completely eliminate this usual source of trouble on other tractors.

There are no clutches, brakes, springs, hollow shafts or other gadgets in the Eimco final drive assembly. All of the bearings are roller anti-friction type mounted in separate steel cages.

Tremendously longer life has been designed into all of the bearings used in the Eimco Tractor. Bearings should not ever wear out. Bearing life is designed for about five times the average life of competitive tractors.

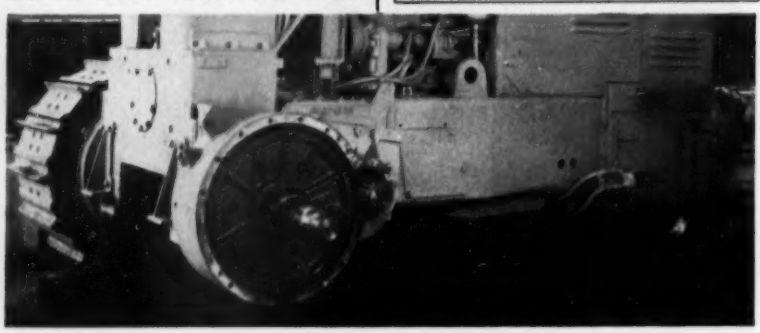
Final drive cases are cast alloy steel and shafts and gears are built to the same design standards that have been used in heavy duty mining equipment that often operates ten to twenty years without repair.

Each final drive assembly is a separate unit which can be removed independently. Or, removal of the final drive cover allows replacement of the gear assemblies through the side of the case.

The Eimco Tractor is designed to operate without failure of the **track roller and front idler** assemblies. This is a one-piece alloy steel casting (1) specially liquid salt flame hardened, and the extra large diameter track roller shafts (2) are also of heat treated alloy steel.

Tapered roller bearings (3) fitted in individual steel cartridges (4) have exceptionally high capacity for long life.

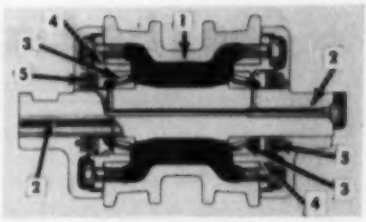
THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A.



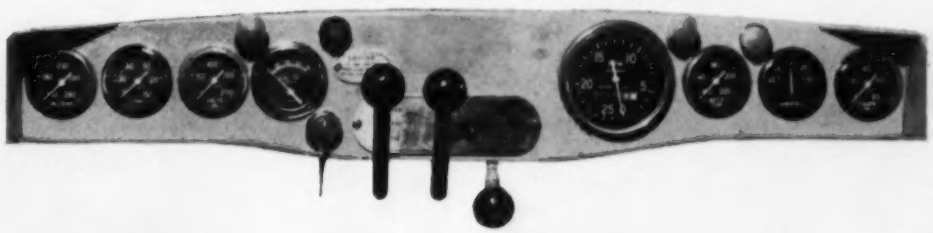
Failure of a bearing cannot damage the track roller. Also, the roller bearings cannot work loose in the roller assembly damaging the seal surfaces.

The seals (5) are accurately lapped and will not allow lubricant to leak from the large lubricant reservoir. The seals cannot be damaged by pressure-operated lubricating equipment.

Your Eimco Tractor will operate without repair many times as long as any other tractor in its work class. When repairs finally are necessary, the faster you can get them done **the more dollars it means in your pocket.**



Simple, Easy Controls



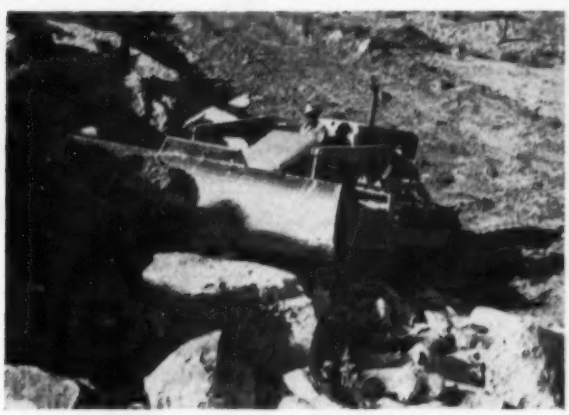
Greatest production is obtained from a tractor when operator physical effort is kept to a minimum. Operating a conventional tractor is hard work—requiring the use of both hands and both feet at the same time to turn, reverse and shift gears.

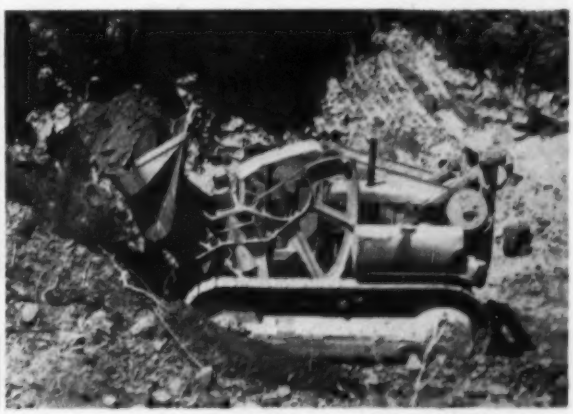
The Eimco Tractor is so simple to operate that an untrained man can do a skillful job after a few minutes instruction. All it takes to run the Eimco is one hand on effortless control levers.

There are no clutch pedals, no steering clutch levers, no master clutch control nor manual gear-shift lever.

The two small levers control all of the track motions from spin turns to forward or reverse without stopping to shift. A third small handle changes speeds in motion without stopping the tractor.

The foam rubber seat up front in the tractor puts the operator where he can see his work without strain or effort.





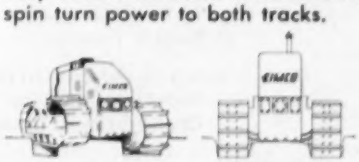
Full power to both tracks in a spin turn applies powerful side push to the bulldozer for operations such as scaling rock along a cliff or uprooting trees or boulders. There is no "dead track" in an Eimco power turn.

Operator has full visibility for operating tractor with loader, dozer or pusher attachments.

EIMCO CONVENTIONAL

In restricted working areas the ability of the tractor to turn in its own length saves time and increases production. Bulldozing in ditches or clearing highway slides, the job is finished faster because the Eimco Tractor does not have to back out to turn around.

Operating in ruts or gulleys it is easy to turn the Eimco Tractor with spin turn power to both tracks.



Maneuverability as shown here provides excellent method for getting out of high-center difficulties.

THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A.

Three 4-man crews, each with a "125" compressor and two heavy breakers, formed fast-moving team.

How to break concrete in a hurry

Jaeger "125's" with 6 breakers hit top speed on U. S. Route 30

The common problem of resurfacing a heavily-traveled thoroughfare with minimum traffic delay was encountered on a section of the four-lane Lincoln Highway, Route 30, east of Pittsburgh. The first step entailed cutting out all manholes, catch basins and other utility structures and replacing with new concrete, prior to resurfacing.

To speed the work, Wilkins Construction Company used three Jaeger 125 Air-Plus Compressors behind six heavy-duty concrete breakers. The 125 cfm volume of these "new standard" compressors provided the air needed to run all six breakers at full pressure and efficiency. Each tool hit 1500 to 1600 blows a minute with an impact of 55 to 60 foot pounds, *breaking concrete up to 40% faster than had 105 ft. compressors been used.*

The Jaeger 125 is the most efficient general purpose compressor you can buy. It is built with micro-precision and engineered to produce full 125 cfm at 100 psi without racing, overheating, vibration.

The Jaeger Model 75 has the capacity to operate efficiently one heavy-duty or two light-duty breakers, which 60 ft. compressors cannot do. It has all the features of larger Jaeger compressors and provides portable power to do hundreds of small jobs at lower cost.

Jaeger Standards:	**75**	**125**	**185**	**250**	**365**	**600**
Old Standards:	60	105	160	210	315	500

For full information, ask for Catalog.

Each "125" had the air volume to hold 2 heavy-duty breakers at full pressure operation.

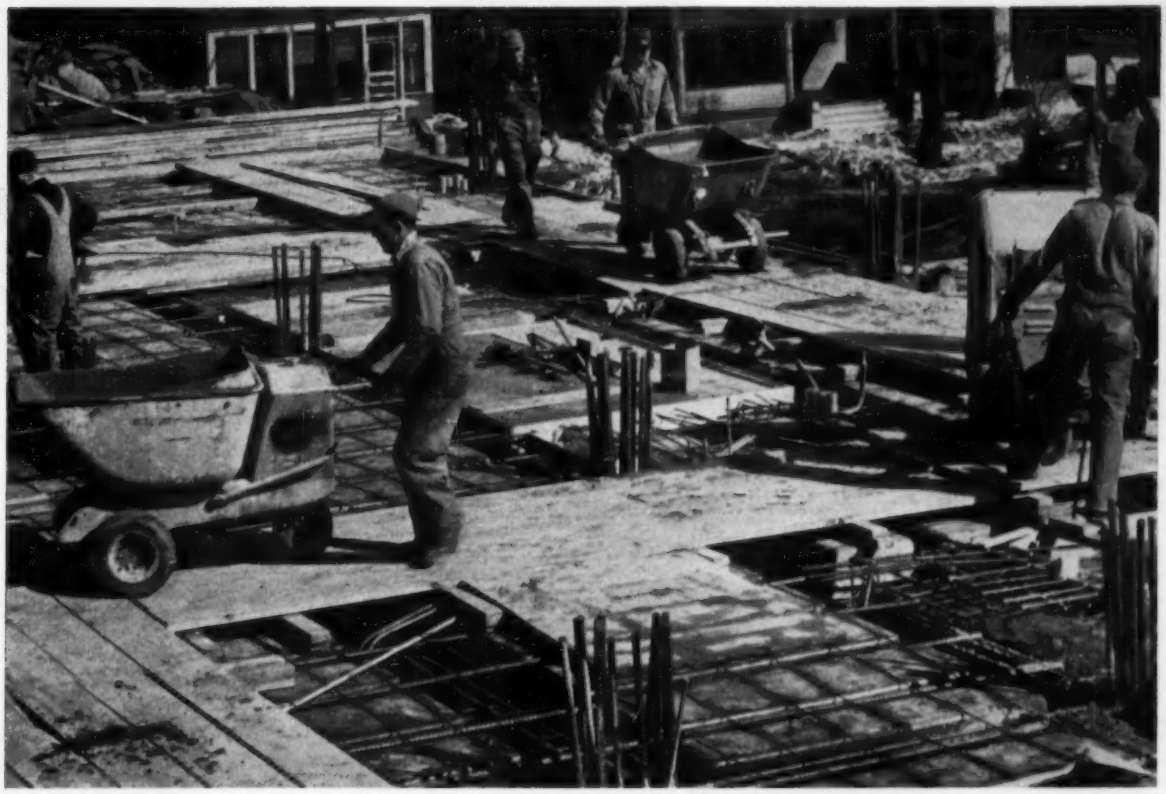
THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • TRUCK MIXERS • LOADERS • PAVING MACHINES

Crane Sets Steel With 197-Ft Boom

STEEL MEMBERS for new 14-story apartment building in New York City are set by Koehring Model 1005 crawler crane with a 197-ft boom. Owned and operated by Dreier Structural Steel Co. of Long Island City, N.Y., the big rig handles all kinds of difficult erection jobs in the metropolitan area. The boom weighs nearly 10 tons and can lift 100 tons at a 12-ft radius. To get the huge machine through the city, the boom is knocked down into lengths of 30 ft or less and tied down to a large trailer. Preparing the rig for moving requires only about 3 hr. The steel company is now considering an even longer boom, probably of lightweight alloy steel and more than 210 ft long.



Efficient Handling of Materials is the First and the Best Way to Cut Costs

Prime-Mover delivering mortar

with power equipment that can be used throughout *the job!*

Contractors use PRIME-MOVERS when there is *concrete to place— brick to haul — materials to move.* PRIME-MOVERS are *every-day* tools . . . tools that help the contractor to bid lower — build faster — make money. PRIME-MOVERS are sold and serviced by reliable distributors throughout the U.S. and Canada. The coupon is for your convenience.

Prime-Mover hauling tile

PRIME-MOVER

THE PRIME-MOVER CO., MUSCATINE, IOWA

Gentlemen: Please send me On-the-Job Reports of Prime-Mover in construction work. Also specification data.

YOUR NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

RAMSET PROFIT ENGINEERING saved Johns-Manville $2400 on *one* job—anchoring acoustical ceilings to concrete.

Drake Hotel installs carpet furring strips; repairs and remodels with RAMSET; enjoys PROFIT MARGIN of $8500 per year.

PROFIT ENGINEERING

INCREASE YOUR

To help you meet tougher competitive conditions and the growing pressure for lower costs . . .

RAMSET PROFIT ENGINEERING offers a new series of specific, proved methods for faster, better, lower-cost fastening into steel or concrete . . . to increase your PROFIT MARGINS.

These Application Data Sheets have been developed from 7 years of tested and proved experience in actual construction. You'll find lower-cost methods for yourself and your subcontractors—

Ramset

RAMSET DIVISION

Versatility of Ramset System helps your PROFIT MARGIN!

Only RAMSET SYSTEM offers such a wide range of powder-actuated fastenings. The low-cost tool combination of JOBMASTER and PLUS POWER JOBMASTER will set ¼", ⅜" or ½" fasteners. The SUPER-POWER JOBMASTER sets ⅜" or ½" fasteners for heavy duty work. Six types of Tru-Set Fasteners, in 76 sizes, permit selection to meet almost every construction fastening need. You can't match RAMSET SYSTEM to increase your PROFIT MARGINS.

Newark Housing Project anchored 10,000 interior doors to concrete, top and bottom, at one-minute-per-fastener.

RAMSET PROFIT ENGINEERS solved difficult scaffold job for Lorain, Ohio firm; fastened wire mesh to old concrete quickly and easily.

RAMSET beat the clock on Los Angeles-Owens River Aqueduct job; saved $2,380 fastening new forms to old concrete.

CAN HELP YOU

PROFIT MARGINS

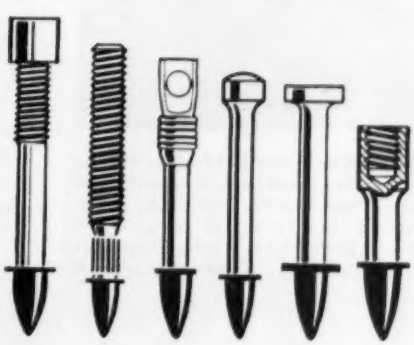
electrical, plumbing, heating, sprinklers, air conditioning, soundproofing, decorating and many other installations.

They help you apply the versatile RAMSET SYSTEM to light, medium or heavy-duty work. They specify which RAMSET tools, fasteners and power charges will do the work most effectively.

Ask your local RAMSET dealer for your Data Sheets, or use the handy coupon, and see for yourself how RAMSET SYSTEM can increase your PROFIT MARGINS.

Fasteners, INC.

OLIN MATHIESON CHEMICAL CORPORATION
12103 BEREA ROAD • CLEVELAND 11, OHIO



Use this coupon to increase your **PROFIT MARGINS**

RAMSET FASTENERS, INC.
12103 Berea Road, Cleveland 11, Ohio

Please send complete set of Application Data Sheets.

Name _____

Company _____

Type of Company _____

Address _____

City and State _____ Key _____

Construction News in Pictures

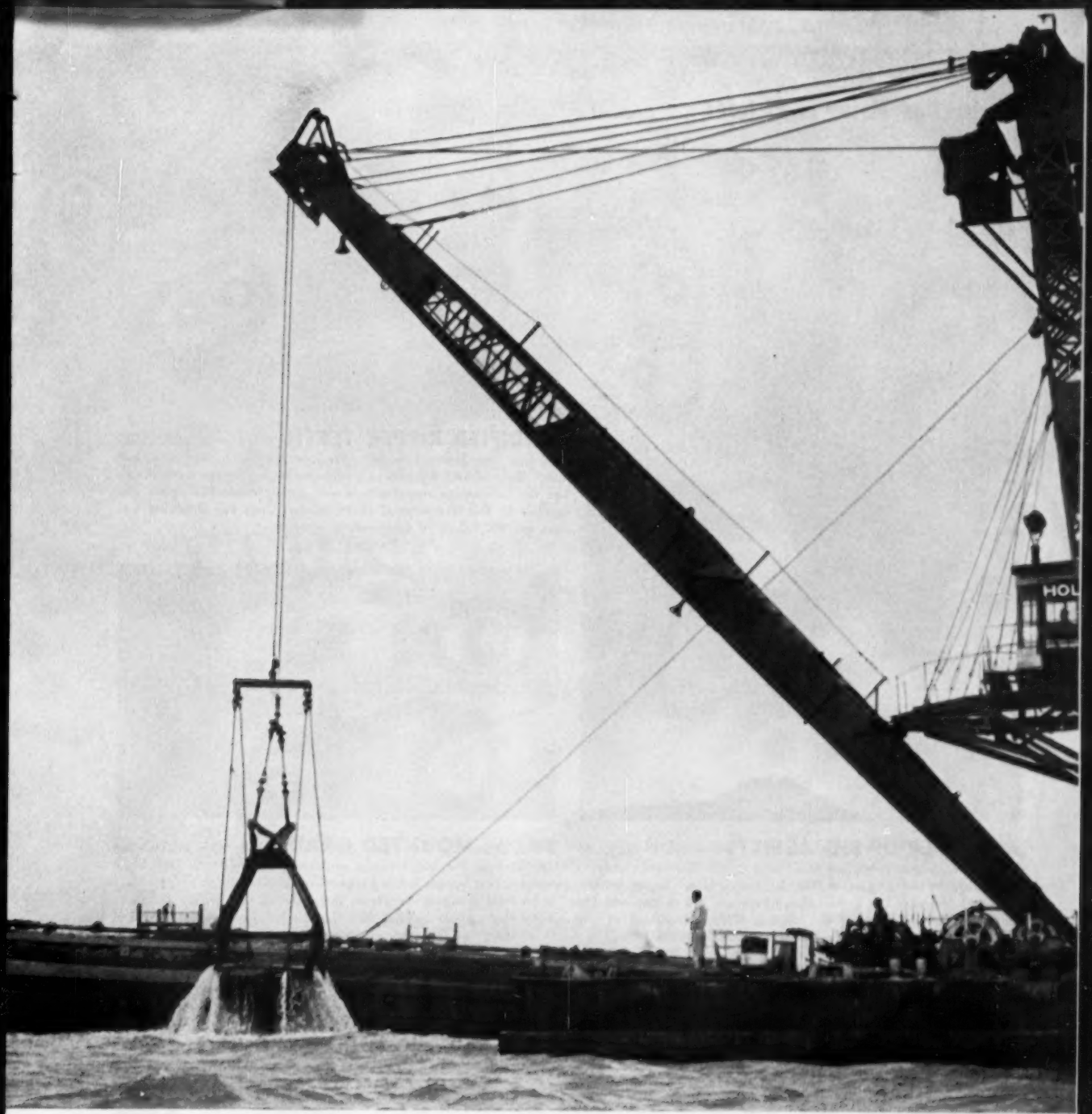
STEEL FORMS ON THE MOVE—This set of traveling steel forms is among the widest ever built, according to fabricator Blaw-Knox, Pittsburgh, Pa. Used to line the Waldo Tunnel, San Francisco, the forms are 46 ft, 6 in. wide and 28 ft 8 in. high. When completed, the tunnel will accommodate three lanes of northbound traffic on Route 101 to the California redwood country and Oregon. The tunnel is nearing completion, but won't be in service for some time, because of uncompleted connecting roads.

DERRICK COLLAPSE HURTS TWO—Twisted girders are all that remain of a 50-ton guy derrick which toppled over on the new Missouri river highway bridge near Leavenworth, Kan., recently. The mishap occurred when derrick supports buried in the earth gave way, dropping the crane weighted with 15 tons of iron. The two workmen were injured when hit by a 1¼-in. cable.

HI-WAY WIDENER—This Gar Wood-Buckeye Hi-Way widener is making the second of two parallel cuts in excavating for the widening of U. S. Route 20 near Erie, Pa. Fred W. Ewig, Inc., Corry, Pa., has the contract for the widening and overlay of the 2-lane road to make it a 4-lane, divided highway with a bituminous concrete surface course.

(Continued on page 44)

City and State _____ Key _____



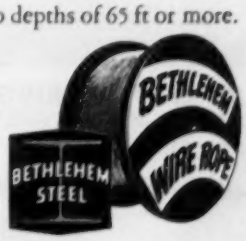
Wire Rope at Work—The *Holland*, a powerful unit owned by the Olympian Dredging Company, is shown here with a bite of San Francisco Bay in its clamshell bucket. The vessel was photographed while dredging for the 63 footings of the Richmond-San Rafael Bridge.

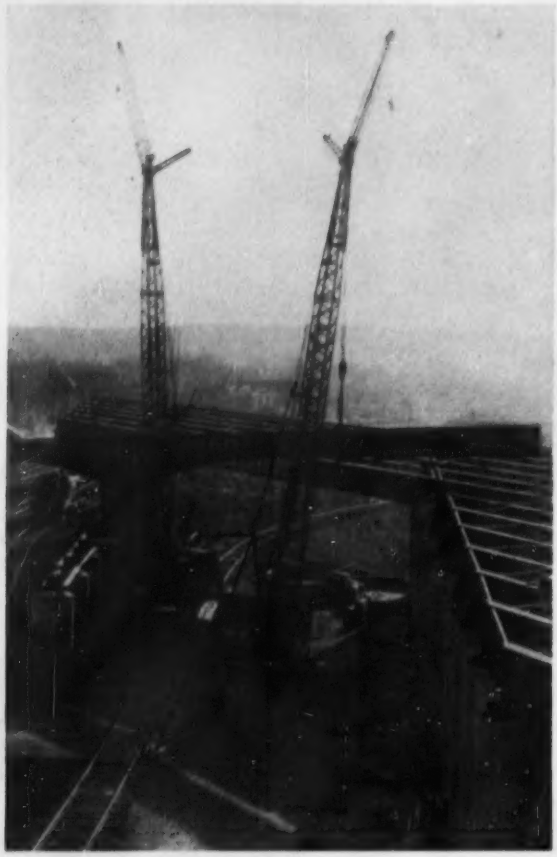
The *Holland* needs substantial quantities of strong wire rope for hoist, swing, anchor, handling, and spud lines. To fill these assignments, Bethlehem rope was chosen . . . several thousand feet in sizes ranging from ¾ to 1¼ in. The grade was Purple Strand (improved plow), as loads were heavy and stresses high. As always, the Purple Strand rope had plenty in reserve for the tough daily grind, which often meant dredging to depths of 65 ft or more.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

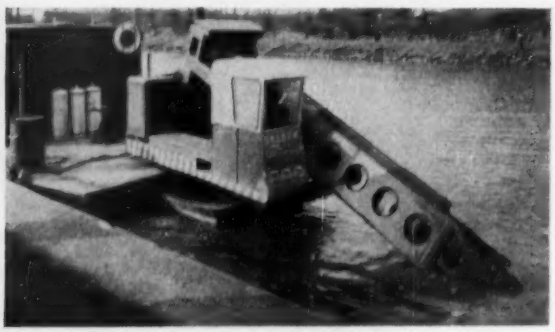
CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING



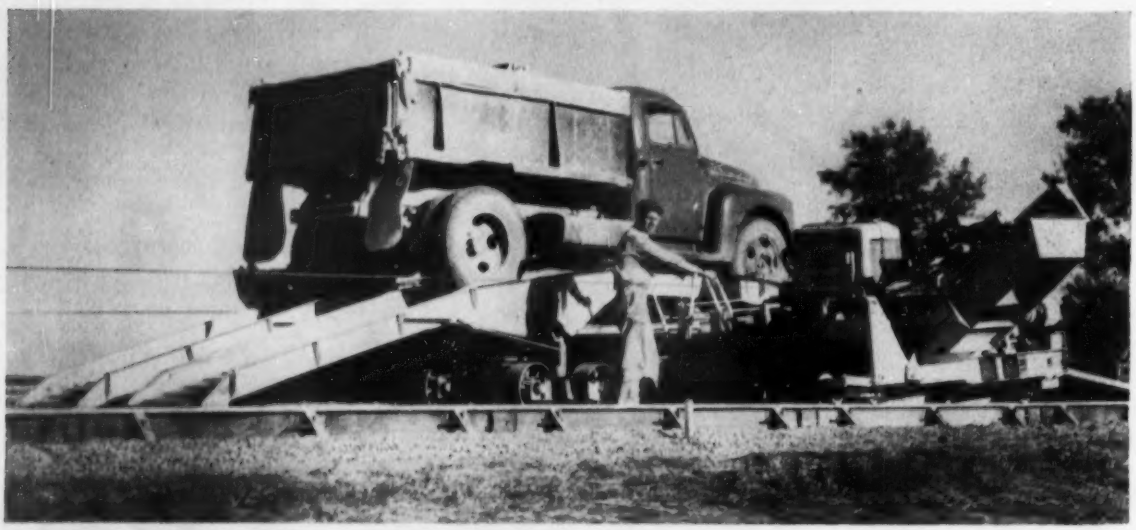


A COUPLE OF BIG ASSISTS—Klevens Corp. of Yonkers, N. Y. uses these two Manitowoc Model 3500 lift cranes to help place 54-ton girders on the Sufferin bridge project on the New York Thruway. The girders shown here are 175 ft long and are fabricated in the yards of the Klevens Corp. Placement of the girders was hampered by the narrow area between the piers.

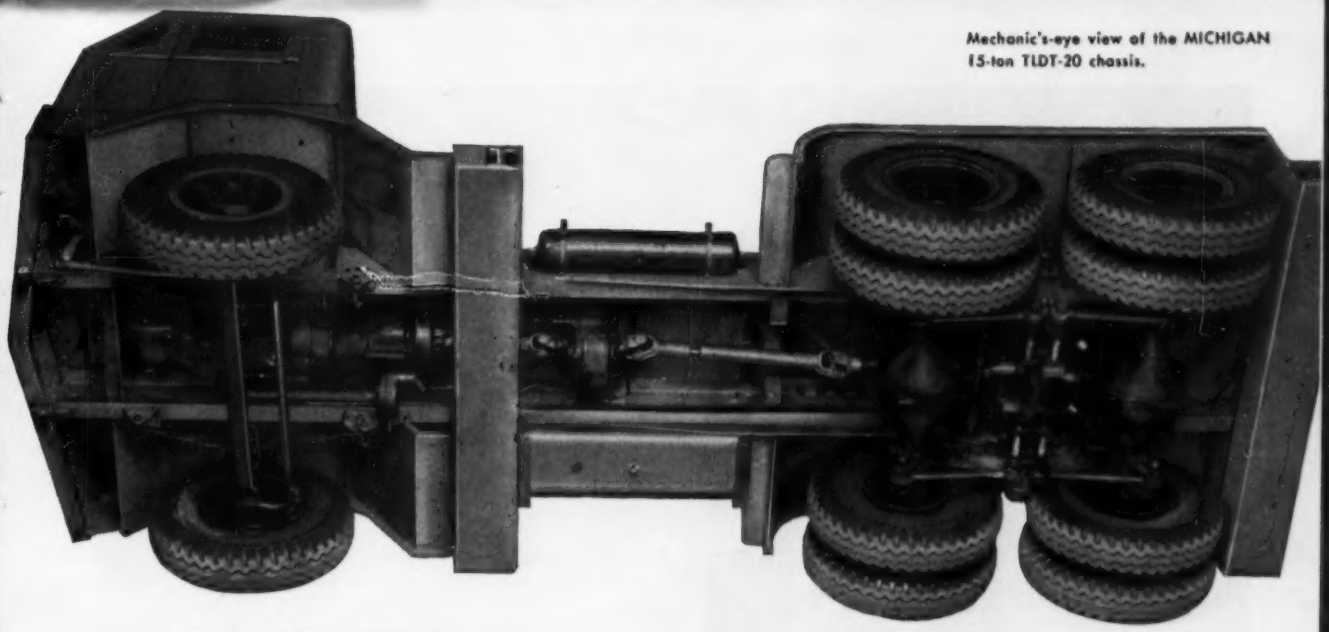
MODIFIED RIPPER TEETH—Rock on a 160-ft cut of a 2.3-mi long highway project near Coos Bay, Ore., was hard, but Jack McLeod held blasting to a minimum by having the tooth shanks on the LeTourneau ripper edged with spring steel. The ripper was pulled by this International TD-24 tractor. Coos Bay Dredging Co. has this 500,000-cu yd earthmoving contract.



BARGE-MOUNTED GRADALL—One of the latest additions to the maintenance equipment on the New York State Barge Canal System is this barge-mounted Gradall. A ½-yd bucket is used for dredging out places in the canals that regular dredging equipment cannot handle. The Gradall has been especially useful in cleaning out the channels under bridges.



CROSSOVER BRIDGE—In order to deliver materials to a 34-E dual-drum paver, which is operating between the forms on a highway paving job near Drayton, N. D., Schultz & Lindsay Construction Co., of Fargo, used this Blaw-Knox crossover bridge. In use, the batch truck, approaching the paver, bypasses the subgrader to reach the paver and discharge the load.

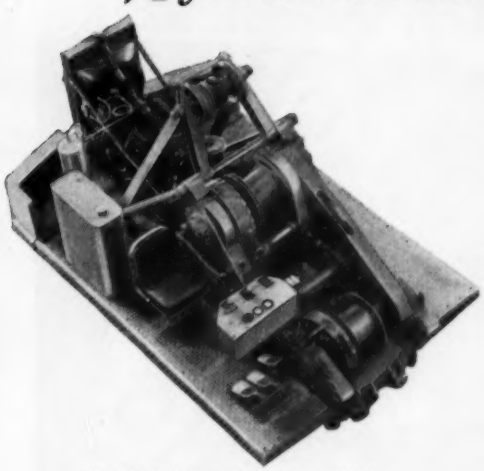


Mechanic's-eye view of the MICHIGAN 15-ton TLDT-20 chassis.

NEWS!... More Quality Features

are Standard Equipment on MICHIGAN

½ yard models than on any comparable machine



The basic ½-yard turntable mechanism —maximum service accessibility.

In your point-for-point comparison (a smart buying tactic!) take special note of these great value features—"extras" on many other makes, standard on MICHIGAN ½ yard Truck Excavator-Cranes.

16-Ton Axles — tremendous strength! No wonder your MICHIGAN stands years of punishment.

404 Cubic-inch Truck Engine—huge power! Compare it to other ½-yard machines.

Cast Steel Turntable—machinery deck with boom hinge-pin bracket and hook roller brackets in a single rugged steel casting.

6 Hook Rollers—on most others you get only 3 or 4. MICHIGAN rollers are ball-bearing mounted for friction-free swings and tapered for easy adjustment.

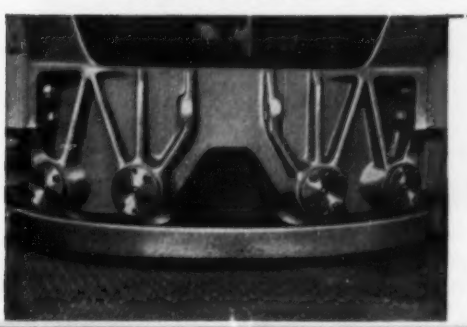
Air Powered Clutches—famous for smooth, positive action; faster swing; minimum fatigue; and easy, quick service.

Ball Bearings—on all shafts and drums.

Power Up and Power Down — on the front drum for precision crane work.

Add these up and get this sure-thing, profitable answer: You Move More With A MICHIGAN. For more information, contact your local MICHIGAN distributor. Or send us the coupon.

MICHIGAN Tractor Shovels are available under the Clark Leasing Plan—we'll be glad to send you details.



Front-view of four of the MICHIGAN's six adjustable hook rollers.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY 24
Construction Machinery Division
380 Second St., Benton Harbor, Michigan

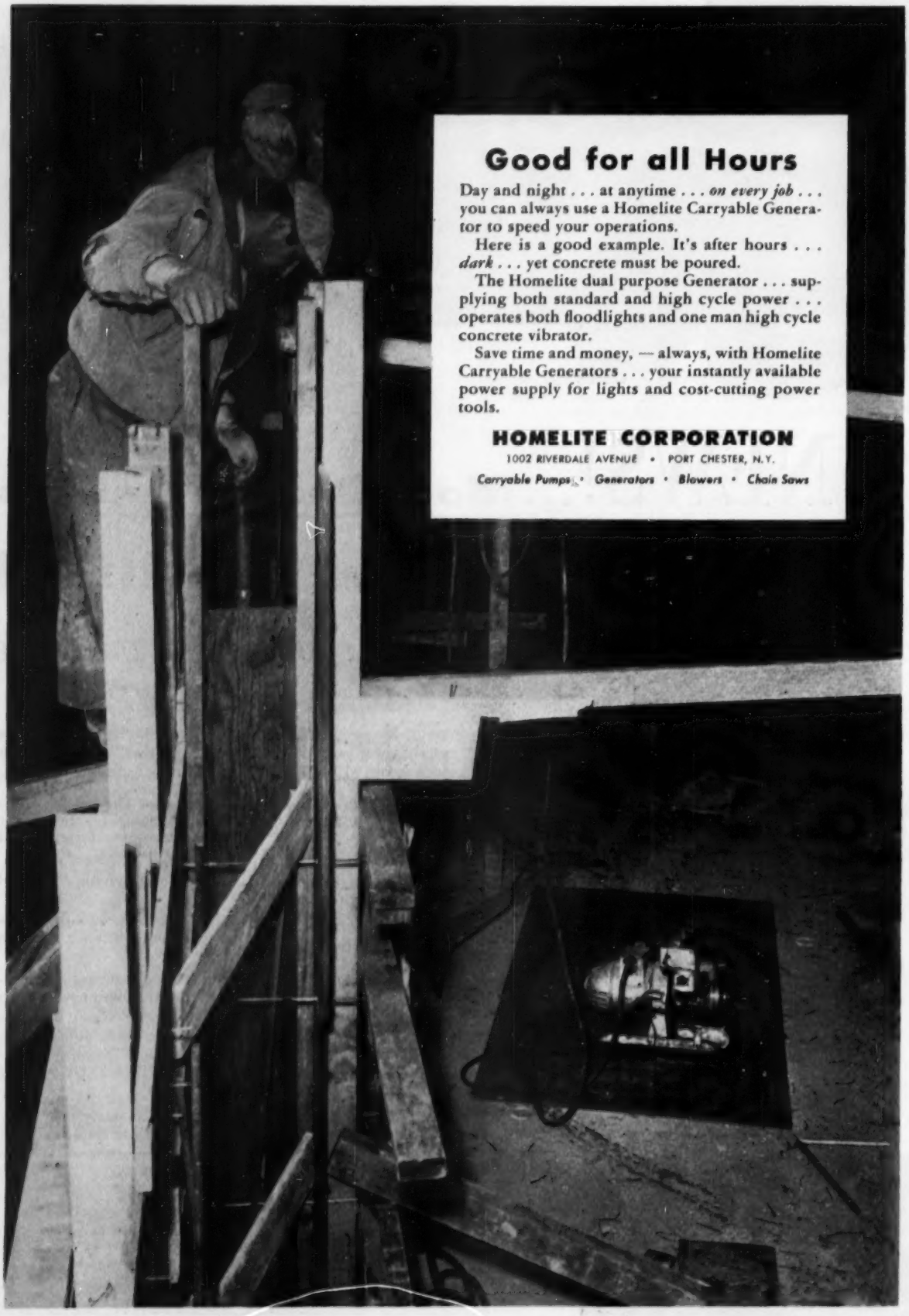
☐ Please send MICHIGAN ½-yard Bulletin ☐ Send Lease Plan data sheet

Name _____ Title _____

Firm _____

Address _____

City _____ County _____ State _____


Good for all Hours
Day and night . . . at anytime . . . on every job . . . you can always use a Homelite Carryable Generator to speed your operations.
Here is a good example. It's after hours . . . dark . . . yet concrete must be poured.
The Homelite dual purpose Generator . . . supplying both standard and high cycle power . . . operates both floodlights and one man high cycle concrete vibrator.
Save time and money, — always, with Homelite Carryable Generators . . . your instantly available power supply for lights and cost-cutting power tools.
HOMELITE CORPORATION
1002 RIVERDALE AVENUE • PORT CHESTER, N.Y.
Carryable Pumps • Generators • Blowers • Chain Saws

Over 2 yards of clay in the bucket of this 1-yard MICHIGAN, owned by Leonard Elam, Gardner, Illinois

Get a Bonus in Every Bucket!

—— *with a* MICHIGAN

Notice two facts about this operation:

1 **More than 2 yards in that 1 yard capacity bucket—a 100% bonus load!**

The independent bucket control on MICHIGAN tractor shovels makes this kind of performance possible. Two powerful double-acting cylinders on the MICHIGAN bucket provide tremendous break-out power, enable the operator to "work" the bucket while it's buried deep in the pile. His bucket-control lever *over-rides* the boom-hoist, so he doesn't have to lift the bucket out of the pile *until* he's got a heaping bonus-load.

2 **All wheels solidly on the ground!**

Here's proof of the MICHIGAN'S bonus margin of weight distribution. These are the heaviest, most powerful tractor shovels on the market today. Even with a 100% bonus bucket load, you still have complete stability and traction.

One brief demonstration will convince you quickly that you'll get a Bonus Bucket every time with a MICHIGAN Tractor Shovel—for more yardage moved, in fastest time, at lowest cost. Such a test is easy to arrange—simply call your nearby MICHIGAN distributor; or use the coupon. MICHIGAN Tractor Shovels are available under the Clark leasing Plan—we'll be glad to send you details.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
380 Second Street
Benton Harbor, Michigan

23

What's this about demonstrating the MICHIGAN Tractor Shovel?

Also, send us ☐ Specifications . . . and ☐ Lease Plan data sheet

Name_____

Firm_____ Title_____

Address_____

City_____ County_____ State_____

Perfect Starting Point for Modern Mechanized Handling of Building Materials...

THE WHITE 3000

SAVE HANDLING TIME . . . CUT DELIVERY COSTS with the truck that can be tailored to your exact operating conditions for substantial time and cost savings —The White 3000.

Here is the perfect starting point for efficient materials handling of concrete products of all kinds because of its functional design, ideal weight distribution, superb maneuverability, rugged performance and power.

If you are contemplating a change in your materials handling program . . . from quarry to building site . . . see your White Representative . . . first!

SPICKELMIER CO., of Indianapolis, Ind., a great name in building materials for 48 years, now has four White 3000's with Superlite Unloaders in service. Handles 900 Haydite building blocks which can be unloaded in 20 minutes. It is a Model 302264 White with 250A Mustang Engine, 24 ft. body, power steering and many other top-quality features.

Modern way to handle a load of 6,000 bricks with real time savings, from plant to off-the-road site.

WHITE 3000 tractor trailer loaded with Rapidex Haydite sectional slabs, a Spickelmier roof and floor system. Maximum payload with minimum handling and remarkable maneuverability with the White 3000!

. . . With the patented safety power-lift cab

IF YOU HAVE A MATERIALS HANDLING PROBLEM—

Or a new operation with specialized transportation needs, see your White Representative. White transportation engineers will be glad to help you achieve maximum transportation efficiency in your own operations.

THE WHITE MOTOR COMPANY
Cleveland 1, Ohio

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

FEBRUARY, 1955 • VOLUME 37 • NUMBER 2

HENRY T. PEREZ, Editor

CONSTRUCTION METHODS AND EQUIPMENT

The Construction Team

"DISTRIBUTORS, MANUFACTURERS AND CONTRACTORS, as parts of a team, have done an outstanding job in making modern efficient construction operations possible. But by understanding our mutual problems better, by working for the long range benefits of both the industry and the public, we can do an even better job in the future."

Thus spoke John MacLeod, President of the Associated General Contractors of America, in an address before the annual convention of The Associated Equipment Distributors late last month. But he went on to point out some areas where teamwork might well be improved.

MacLeod had thought-provoking words for the distributors. "I know that conditions have changed, and that it is now a buyer's market. You may feel that it is harder to sell now than it was before. But I believe that you will be able to sell as you make yourself useful to the contractor.

"Competition between general contractors for new work coming on the market is terrific. To get the job, we are having to explore every possibility for more efficiency and economy. It will be very important to us to know what pieces of equipment will do each part of the job most economically.

"The distributor can perform a great service to the contractor in knowing the capacity and limitations of the equipment he handles, and in giving the contractor reliable information on the best equipment he needs for the job. Distributors will make friends and build good will by giving the contractor the information he needs, and not just try to sell him to make a sale. Certainly a knowledge of construction methods will help the dealer make the correct recommendations to the contractor.

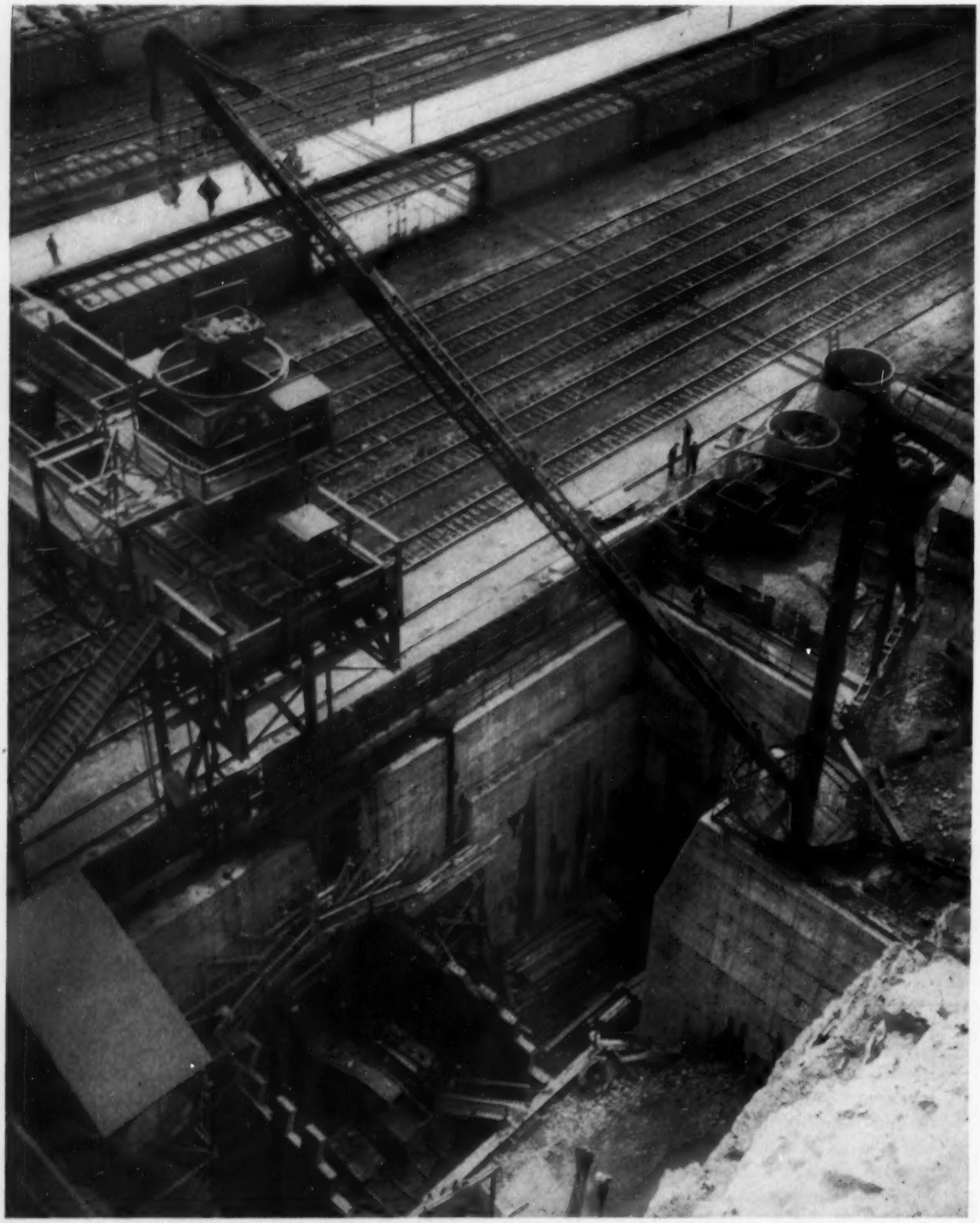
"After the dealer has sold a new and improved piece of equipment, it is logical to expect that he should instruct the contractor's operators in the proper and safe handling of the machine, and how to maintain it. One of the greatest services the distributor can give the contractor is to have repair parts available promptly, particularly in these days of such keen competition. A contractor cannot afford to have equipment idle very long while repairs are made. It is particularly expensive in highly mechanized jobs when one piece of equipment may be in a key spot where its failure will tie up a whole production line."

Unsound credit practices, which have been a headache, were pointed up anew by MacLeod. "Speaking for 6,500 AGC members, we deplore actions which give undue encouragement to bringing in what might be irresponsible contractors into the industry. We clearly recognize that all construction firms had to start sometime, and they had to start as small ones. And we all have known that difficulties of obtaining necessary credit when we had little experience behind us.

"But many of us have heard recently of instances of extending what seems to be excessively easy credit to contractors just entering the business and who have not yet demonstrated the qualities of skill, integrity and responsibility. I can understand the natural desire to increase sales, but I do not believe that distributors, the industry or the public are benefited by consistent departure from what have been recognized as sound business principles."

MacLeod also deplored the practice of selling equipment to public agencies at prices less than those charged contractors. "Everyone benefits as we strive for greater responsibility throughout the construction industry."

All this has been said before, to be sure. And most contractors, distributors and manufacturers subscribe to these beliefs. Yet in some instances there has been a wide gap between the saying and the doing. Equipment has been put on the market before it is thoroughly tested and proved. Machines have been recommended and sold for applications where they are obviously unsuited. Stocks of spare parts have been allowed to deteriorate to dangerously low levels. And credit has been extended on construction ventures that are little more than reckless gambles. Only when these unsound practices are stopped will the entire construction team be able to function at its greatest efficiency in gaining its common objective—to build better, faster and at less cost.

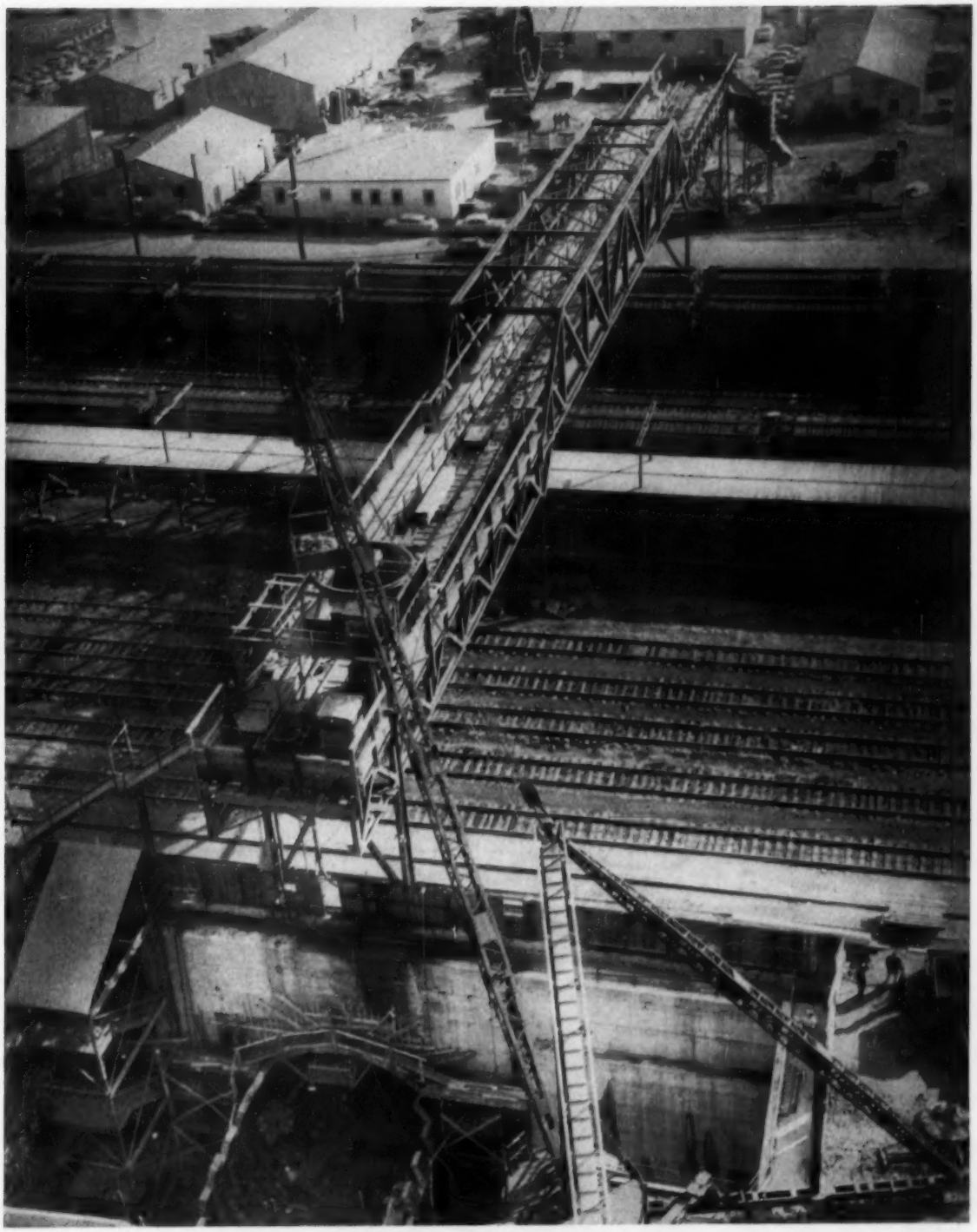


MUCK BUCKET hoisted out of New Jersey shaft of Lincoln Tunnel's third tube is swung over car-loading funnel near end of bridge. Shaft is starting point for 5,500-ft subaqueous section to New York and also 700-ft land section in the opposite direction.

"Surrounded" Tunnel Shaft Complicates Muck Handling

By ALBERT C. SMITH, Associate Editor

CRAMPED QUARTERS at the New Jersey shaft of the Lincoln Tunnel have created tough muck-handling problems. Rock blasted out of the land section of the tunnel's new tube has to be hauled to the shaft, hoisted out with a

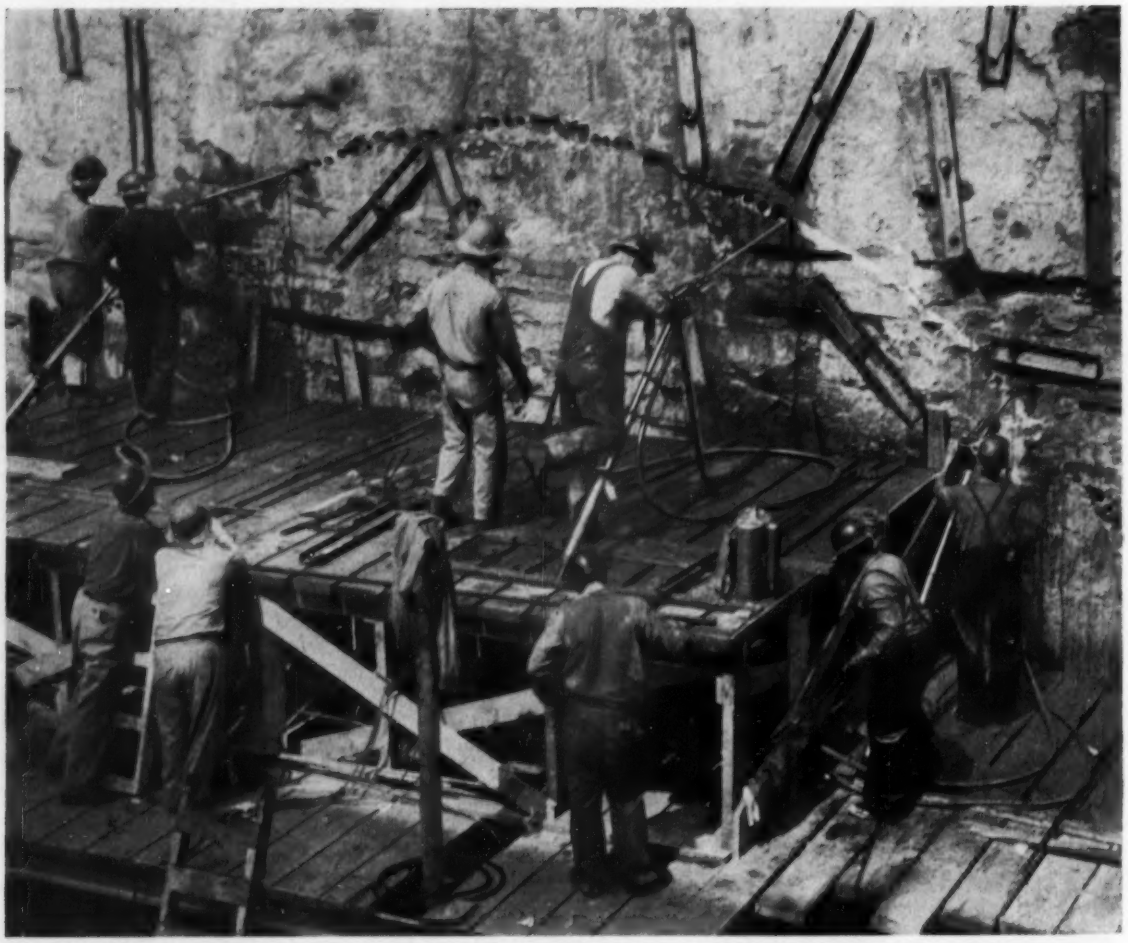


STEEL TRUSS BRIDGE 350 ft long carries two narrow-gage tracks across railroad yard. Muck dropped into the funnel is loaded into cars, pulled across bridge, and emptied into truck-loading hopper in contractor's yard near edge of Hudson River.

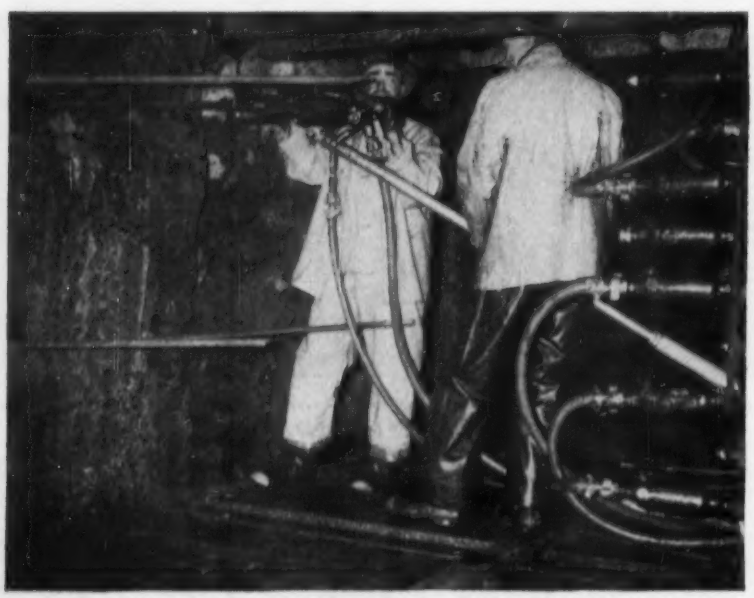
derrick, carried in cars across a 350-ft bridge, and emptied into a truck-loading hopper.

That's a lot of handling, but there's no better way to do it. The 55-ft deep shaft, which will eventually be the foundation of one of the ventilation buildings, is almost completely inaccessible. It is hemmed in by steep cliffs, a railroad yard, and the huge ventilation building of the existing tunnel. And until a construction shaft can be sunk near the edge of the Hudson River, the ventilation shaft is the center of all tunnel construction operations on the New Jersey side.

One crew started recently to push a shield from the base of the shaft toward New York, as another



LINE DRILLING at base of New Jersey shaft starts top heading for 700-ft rock tunnel connecting new tube with existing toll plaza. Note how new lightweight Ingersoll-Rand Jackdrills with air-leg feeds are operated without fixed mountings on the jumbo.



JACKDRILL is fed into hole by 72-in. air-leg. One man steadies unit as it drills 1⅜-in. holes into the rock face. Each shot required 150 holes drilled 15 ft deep.

crew completed the driving of a large top heading from the shaft back through 700 ft of rock to the existing New Jersey toll plaza. The top heading was completed before the shield began its move so that muck from two tunneling operations would not have to be hoisted through the shaft at the same time. The bench in the 700-ft tunnel is now being excavated, but the muck is being hoisted up through a shallow temporary shaft near the toll plaza.

When the top heading was started, joint-venture contractor, Mason-Johnson-MacLean, set up a 30-ton stiffleg derrick on the edge of the shaft. The rig handled all muck from the heading, and is now removing rock blasted out in front of the shield. With a 110-ft boom, the rig hoists muck buckets, swings them over one end of the bridge, and dumps them into a funnel. The 2-yd battleship buckets used with the shield are opened

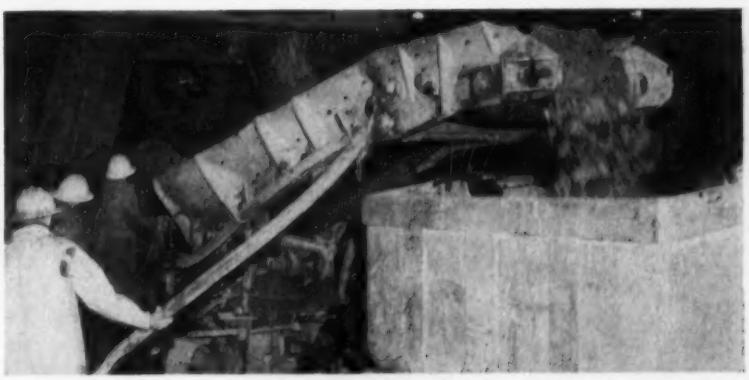
SHORT-BOOMED ELECTRIC SHOVEL, a Bucyrus-Erie 22-B, mucks blasted rock with 1-yd bucket and dumps it into 6-yd Dumptors which haul to shaft and dump into bucket.

STEEL OUTRIGGERS hold 6-yd muck bucket on funnel frame, as gates open by gravity.

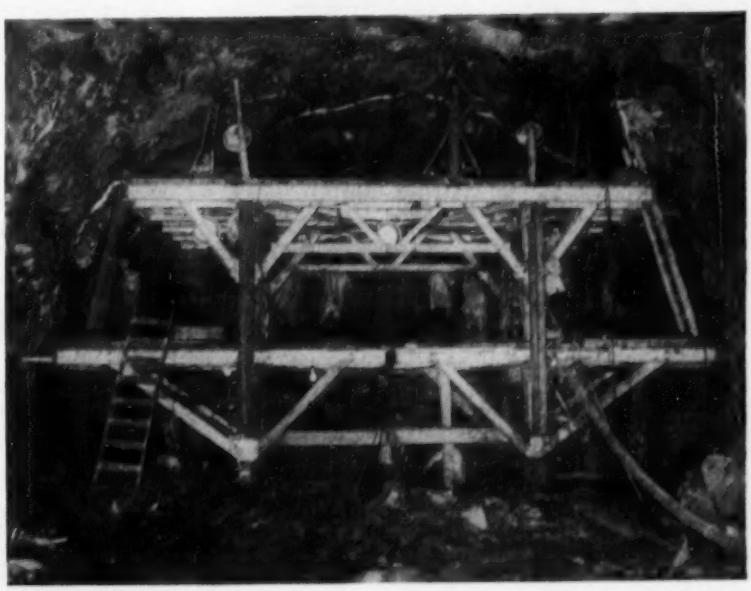
like a clamshell bucket. The 6-yd bucket that handled muck from the heading was tripped by a special frame on top of the funnel. Muck drops directly into side-dump cars, which are pulled across the 2-track bridge by a diesel locomotive and emptied into a hopper. Dump trucks load up under the hopper and haul the muck to a spoil area.

Instead of hauling muck across the bridge, the contractor could have dumped it directly into railroad gondola cars. But this method would have been too expensive. The steel-truss bridge had already been erected by the Port Authority to provide access to the shaft, and the contractor decided to use one track for hauling muck. It was a slow operation, but it did the job.

Although the driving of the 700-ft rock bore through the cliff was dwarfed by the size of the overall project, it was still a big tunnel job. The face of the top heading consisted of a 34-ft dia upper semicircle plus a 4-ft wide horizontal strip below. For the most part, the rock was stable and it broke well. Only a faulted area near the middle had to be supported. The first 200 ft was shale, the 250-ft center section was trap rock, and the final 200 ft was sandstone.



EIMCO MUCKER loads cars with rock blasted in front of the shield. When the shield reaches the river's edge, muck will ooze through ports in the front, as the shield is shoved.



TWO-DECK MAYO JUMBO riding on rails supports crew during drilling and loading. After shot is fired, center flaps on lower deck are lowered to allow muckers to pass through.

New Type Drills

Drilling was done fast and easily with new type drills operating from a 2-deck Mayo jumbo. Actually, the Mayo rig was more of a scaffold than a jumbo, because the new Ingersoll-Rand Jackdrills require only a kicker to buck against. The lightweight Model JR38 unit is a completely inte-

grated air-leg drill, requiring no booms or special fixed mount-rigs. It weighs only 105 lb, has a 6-ft feed, and handles 1⅜-in. bits.

The drill is simple to operate. Holes are first collared by setting the unit against the face and supporting it with slight pressure from the air leg. The driller steadies the front end of the machine as the hole is collared at part throttle. As the drill gets started, full throttle is turned on and the air-leg pressure is adjusted, as needed. Only a slight hand pressure on the back end of the drill is required to hold the unit in position.

Another big advantage is flexibility. In certain faces, rock chips were dislodged by the drillers on the top of the jumbo and fell on those below. To solve the problem, the drillers on the lower platform carried their Jackdrills up on top and worked at the same level as the other crew. When all the holes were drilled that could be reached from the top, the entire crew moved down below. This quick adjustment would not have been possible with conventional drifters. Other advantages are low air consumption, high drilling speed, and low first cost.

Up to eight of the Jackdrills were used at the same time on the jumbo. Manifold outlets for air and water made it easy to shift the drills. The 115 holes for each shot were drilled 15 ft deep, with 1⅜-in. carbide bits. Only one change of drill steel was required. A 6-ft piece of steel started the hole and was changed to a 15-ft piece. Holes were loaded with 1⅛-in. sticks of DuPont 40% dynamite and fitted with 5-millisecond delays in the cut. Delays from one to 12 sec were connected to relievers and drifters. Dynamite factor was 2¾ lb per cu yd. Right after each shot, a reversible blower pulled out fumes and then blew in fresh air.

When the drillers returned, they lowered the center flaps in the jumbo to allow the mucking equipment to pass through. A short-boomed Bucyrus-Erie 22B electric shovel with a one-yd bucket loaded two Koehring Dumptors that hauled 6-yd loads of muck out to the shaft and dumped into the self-opening bucket, mentioned before. To speed hoisting, the bucket platform in the shaft was placed on a swinging arc of 65-ft radius, allowing the derrick to swing buckets to the funnel without booming in or out.

Production in the 700-ft heading averaged about 330 yd per day with one shot. Drilling was done in the morning, loading in the afternoon, and mucking at night.

M. L. MacLean is project manager, G. Sager is general superintendent, and H. E. Cronin is resident engineer for Mason-Johnson-MacLean. John M. Kyle is chief engineer of the Port of New York Authority, and H. A. Druding is resident engineer for the Third Tube project in New Jersey.

A full report on the underwater tunnel driving will be presented in a future issue. The job will be completed in 1957.

Protect Off-Highway Rigs During Storage

WEATHER, RUST AND CORROSION can seriously damage off-highway equipment while it waits out the winter season. Euclid Road Machinery Co. offers the following recommendations for protecting a unit so that it will be ready to go back to work when you need it.

1. **Inspection and Repair** — Thoroughly inspect and test the vehicle and make any repairs or adjustments which may be necessary to prepare the unit for service. This will enable you to put the unit back into use immediately at the end of the storage period.

2. **Lubrication**—Lubricate the vehicle completely according to the instructions given on the lubrication chart for the particular model.

3. **Parking** — After thoroughly cleaning the entire unit (this cleaning is important), park it on a hard, dry, level surface that is free from grease and oil which would cause tire deterioration. Pull on the parking brake! Cover the exhaust stack if necessary to keep out rain, and if it is a trailer unit you are storing, open the trailer doors to allow water to drain during the storage period. If the storage period is over 30 days, disconnect trailer and scraper and block them up at the draw bar and rear axle to take the weight off the tires. Tractors and rear dumps also should be blocked up under the axles so the tires clear the ground or floor.

4. **Batteries** — Where moderate temperatures are expected, the batteries may be left in the vehicle. If the unit is not going to be used for about 30 days, batteries will require a booster charge at the end of the storage period. Over 30 days, it will be advisable to place batteries in the shop where they can be inspected and given a booster charge when necessary. In very cold or hot climates store the batteries where they will be protected from temperature extremes.

5. **Rust Prevention** — Clean all evidence of rust from the vehicle and cover such places with a good coat of paint. In addition, cover all exposed machined surfaces with a top quality rust preventive.

6. **Supply Tanks**—Open the drain cocks at the bottom of the unit's air reservoirs, and fill all fuel and hydraulic tanks to prevent moisture condensation within the tanks.

7. **Tires**—If storage period is under 30 days., inflate all tires to proper operating pressure. During storage check inflation pressures approximately once every 2 weeks. Over 30 days, the unit should be up on blocks. Deflate the tires to 10 lb, clean off all grease and oil and protect the tires from direct sunlight and water with a suitable cover.

8. **Engine** — Consult the maintenance manual published by the manufacturer of your particular engine for complete data on storing the engine for the planned storage period.

HERE'S THE AMERICAN MODEL 375 truck-crane all tucked away in its "possum belly" trailer ready for unrestricted highway travel in California with legal loading on all axles. Total loaded weight of the trailer amounts to 26,200 lb.

CRANE REMOVES COUNTERWEIGHT with its own mechanism, then turns, picks it up and lifts it easily into the belly of the trailer. It rides lengthwise.

COUNTERWEIGHT about ready to go into the recessed hole in the special trailer. The 85-ft boom, 15-ft extension, cable and rigging ride on cradles on top of the 8-wheel trailer.

Recessed Trailer Puts Truck-Crane Under Load Limits

AN INGENIOUS TRAILER designed for the purpose of making an American model 375 truck-crane conform to load requirements on any highway in the state of California is in use by the Moore Dry Dock Company, Oakland.

The weight problem was overcome by putting the boom and counterweight into the "possum belly" two-axle trailer, which distributes each axle loading at 13,100 lb.

The counterweight fits into a recessed opening in the trailer that permits it to ride lengthwise between the axles. The 85-ft boom and 15-ft extension, cable and rigging ride on top of the trailer.

The five axles of the truck-trailer unit distribute the weight so it easily meets State requirements.

James R. Moore, vice-president of the Moore Dry Dock Company says: "We no longer worry about special permits of traveling at restricted times during low traffic hours. We just load up and roll on to the next job".

FIRST LIFT of bridge deck paving is lightweight concrete. Stiff mix is vibrated thoroughly around reinforcing. Flex-Plane finisher with vibrating attachments on screed spans 36 ft. Edges are hand-finished because machine cannot run on top of forms.

Three 36-Ft Finishers on Bridge Deck

THREE FINISHING MACHINES, 36 ft wide, are key elements in placing concrete in the deck of the Richmond-San Rafael Bridge in California. (CM&E, Jan. 1955, p. 129) Two nearly identical units spread and finish concrete; the third machine applies a broom finish and sprays curing compound. All three are Heltzel Flex-Plane machines.

Working with the finishing equipment is a fleet of Whiteman Power Buggies that ride ramps built above each side of the pavement and pour from movable cross-bridges. The system of machines, runways and ramps was worked out by Ed Larkin who heads up the joint venture of Hilp, Rhodes and Larkin who are subcontractors for the bridge deck. Prime contractor for the bridge superstructure is a joint venture of Judson Pacific-Murphy Corp. and Peter Kiewit Sons Co.

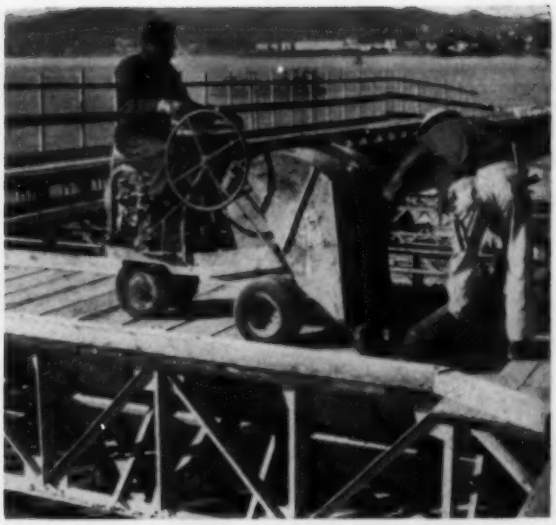
Two finishing machines are needed because the concrete must be poured in two lifts—one lift for lightweight concrete, and the other lift for a ½-in. thick rich mortar wearing surface. The concrete is 10½ in. thick for the steel girder sections of the bridge and 6 in. thick for the truss sections where supporting members are closer.

Concrete is brought to the job in truck mixers that are parked on an incline to facilitate dumping of the stiff lightweight concrete. Planks are laid on the existing portion of the bridge deck to protect it during concreting operations.

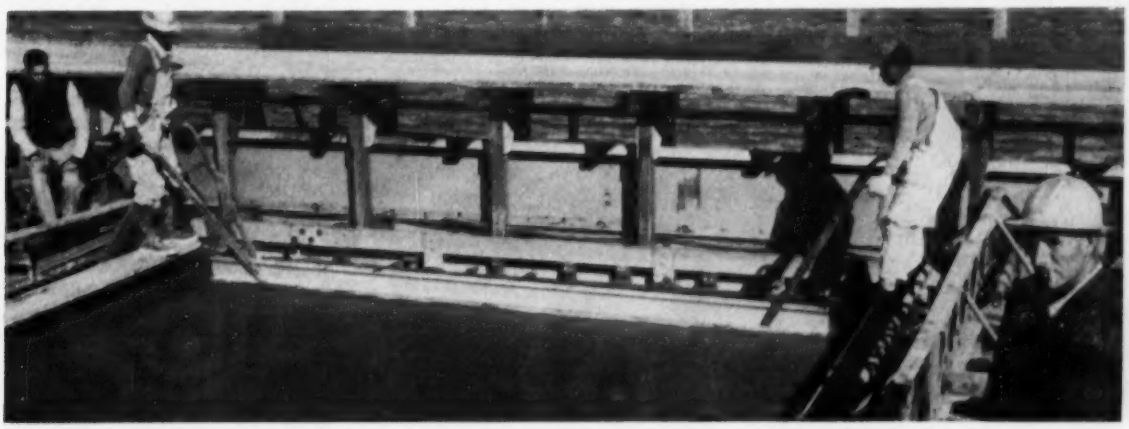
Concrete is poured from movable bridges ahead of the finishing machines. The bridges are propelled by the machines and are wedged in place when the machines return for additional passes.

Travel by the Whiteman Power Buggies is on runways built along each side—one runway used for each direction of travel. Runway elevation is at the same level as

WHITEMAN POWER BUGGIES bring lightweight concrete from truck mixers, dump from bridge propelled ahead of first-lift finisher.



WEARING-COURSE MORTAR ½ in. thick is placed within the hour. Whiteman buggy pours through floor chute in traveler.



HAND-FLOATED FINISHING is about the only non-mechanical operation. Concrete is placed 10½ in. thick for the steel girder sections of the bridge and 6 in. thick for the truss sections where supporting members are closer together.

Work Lightweight and Wearing Concrete

the movable cross-bridges. Normal operation calls for pours of 100 to 200 ft of pavement in one day's operation. That would make maximum travel of the power buggies just over 400 ft.

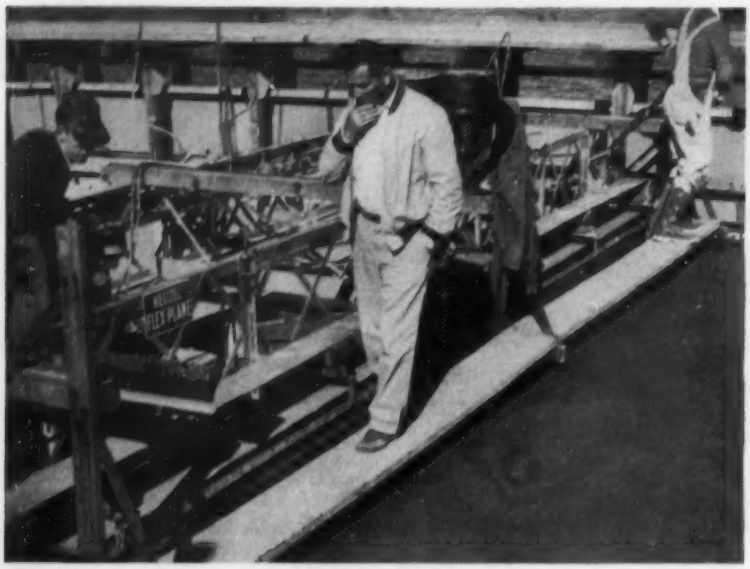
The finishing machines are similar to Flex-Plane highway paving equipment except that they span 36 ft. The machines spread and smooth the concrete. Concrete workers hand finish the edges as there is not enough room for the machines to operate over the top of forms as they might on highway paving.

The pavement is required to have a broom finish. To provide this, a machine was supplied that does this automatically. Two broom heads are mounted on an endless belt that moves across the roadway. This gives the necessary surface texture while the machine is moving slowly along.

On the rear of this same machine are mounted two spray nozzles that automatically apply the white Hunt's Process compound used for curing. The nozzles are shielded to protect the spray from the wind.

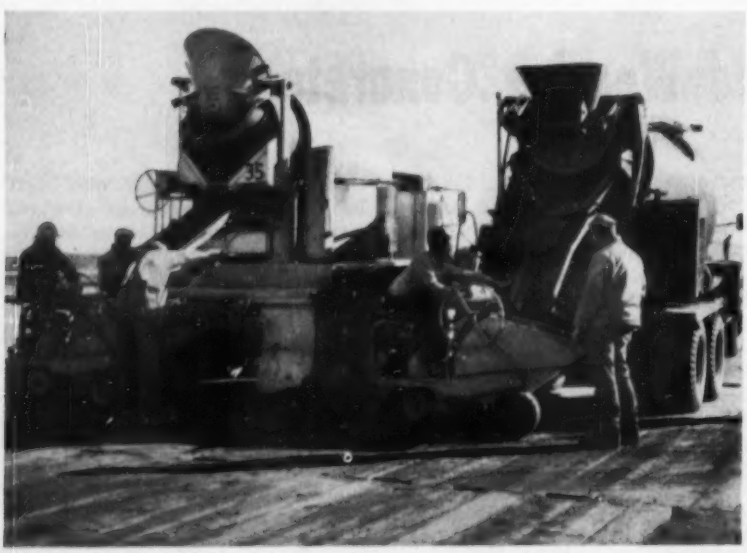
Lightweight concrete must meet a 103-pcf maximum. And 28-day strength is set at 3,000 psi. Specifications call for 6½-sack mix and a 2- to 4-in. slump. This means that the water-cement ratio must be kept low to meet the strength requirement. Result is a water-cement ratio of 0.58 to 0.60 by volume. The stiff mix means extra effort in moving the mix from the truck mixers to the motorized buggies. And it means that two or three passes by the finishing machine must be made to assure even distribution of the mix. An air-entraining admixture (Darex) is used mostly for durability. But it also helps workability.

Topping the lightweight concrete is a ½-in. thickness of a rich mortar wearing surface. This is a 1:3 mix by weight of cement and na-



BROOM FINISH is applied mechanically to surface that has nearly set up. Note broom attached to belt of finisher (underneath sign). Two sets of brooms give surface texture.

TIMBER INCLINES raise front wheels of transit mix trucks to facilitate discharge of stiff lightweight concrete mix. Power carts line up at right in one-way traffic pattern.



PLANKING PROTECTS finished pavement where truck mixers unload into carts. At left is a Mack truck with a T. L. Smith mixer; at right a White mounting a Rex Moto-Mixer.

tural sand with the mortar running between 9 and 10 sacks per cu yd. It also must meet a 3,000 psi, 28-day strength. Average water-cement ratio for the mortar is 0.69 by volume.

Requirement on the lightweight aggregate is that the coarse aggregate (1-in. max.) must be not less than 35 pcf and not more than 50 pcf. Fine aggregate (up to ¼ in.) must be between 40 pcf and 60 pcf.

Two different aggregates are used, depending on availability. When working from the Richmond end of the bridge, a natural aggregate—Basalite—goes in the mix. On the San Rafael end an expanded shale aggregate—Haydite—is used. Haydite has angular grain particles and results in a stiffer, harder-to-move mix than Basalite which has a more rounded nature.

All the concrete is supplied by Readymix Concrete Co. who have handled much lightweight concrete in the San Francisco area. Readymix in turn has the concrete batched at existing commercial plants in Contra Costa and Marin Counties as Readymix's facilities are all in San Francisco.

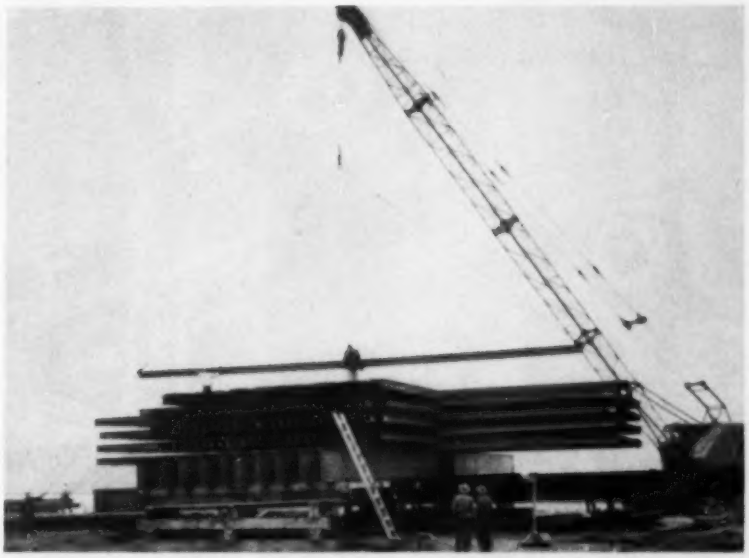
The Richmond-San Rafael Bridge is a project of the Division of Bay Toll Crossings of the California Department of Public Works, Norman C. Raab, projects engineer. Ben Balala is resident engineer.

Steamboat's Final Voyage Is on Tracks

THE 49-YEAR-OLD sidewheel steamboat "Ticonderoga," long a familiar sight on New England's Lake Champlain, is making its final voyage on railroad tracks. Supported by a track-mounted cradle, the "Ti" is being hauled 2 mi by tractor and winch to a permanent anchorage on the lawn of the Shelburne Museum near Burlington, Vt.

To get the 700-ton boat off the Lake, contractor Merritt-Chapman & Scott Corp. of New York dug a basin into the shoreline and built up a dike and a 200-ft inshore adjoining area. The tracks and cradle were positioned in the inshore area. The boat was next moved into the basin, the offshore end was closed, water was pumped into the basin, and the boat was moved in over the cradle. The dike was then breached, dewatering the area, and leaving the "Ti" high and dry. The heavy boat is now being moved ahead, as tracks are picked up from behind and laid ahead.

H-Pile Takes 450-Ton Test



CRANE PLACES a steel beam on the load used to test a 14-in. H-pile for the Richardson Bay Bridge being constructed north of San Francisco. Total load is 450 tons and design load 225 tons. Net settlement after removing load was ¼ in.

A 14-IN., 193-LB, H-PILE has withstood a 450-ton load test on a northern California bridge job. The huge load is one of the heaviest loads ever imposed on an H-pile and double the 225-ton design capacity. The pile was driven 138 ft to solid end bearing, and left in place for 60 hr. Net settlement after removing the load was ¼ in.—just equal to the maximum permitted. Total settlement during the test was ¾ in. But part of this was due to elastic deformation of the steel member and was regained on removing the load.

The bridge is the ½-mi long Richardson Bay Bridge on U. S. 101 near San Francisco. Plans call for 238 bearing piles each designed for 225 tons—by far the heaviest single-pile load ever permitted on a California Highway Department bridge structure.

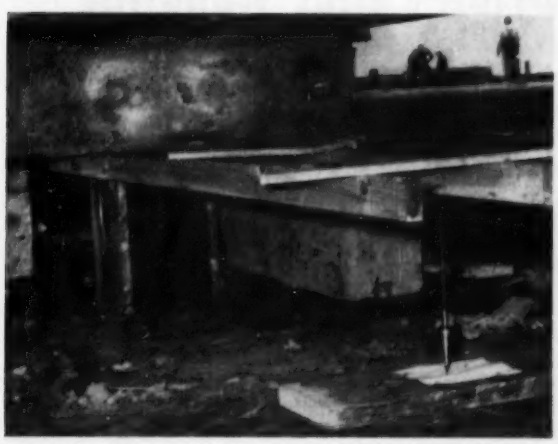
The contractors, Duncanson-Harrelson Co. and Pacific Bridge Co., were permitted to select any one of several pile designs. And pile load test was included as part of the regular work on the job with a bid item for the test.

The load included a 104-ton grillage made of 36-in. steel members that will be used by the contractor as falsework on later parts of the work. Between the pile and the grillage was a short heavy needle beam specially fabricated for the job. Loaded on the grillage were 10-in. H-piles that are to be used elsewhere on the job.

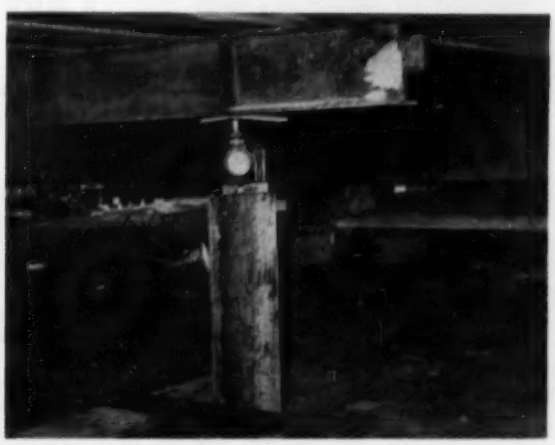
Six hydraulic jacks supported part of the load to keep it in balance. At each end of the first tier of the grillage, was a 70-ton jack. Two 50-ton jacks working through a transverse beam supported each end of the second tier of the grillage. These six jacks took from 0 to 30 tons of the load as it was placed. Final elements of the load were placed to balance weight as nearly as possible on the jacks. Naturally, the total load had to be substantially in excess of 450 tons to result in a net 450-ton load on the pile.

Now that the pile test has been successfully passed, pile-driving work has begun on a routine basis. Driving the heavy piles is Ben C. Gerwick, Inc., serving as a subcontractor. A 32,000-ft-lb double acting steam hammer (Vulcan 140C) is mounted on 100-ft leads for pile-driving operations.

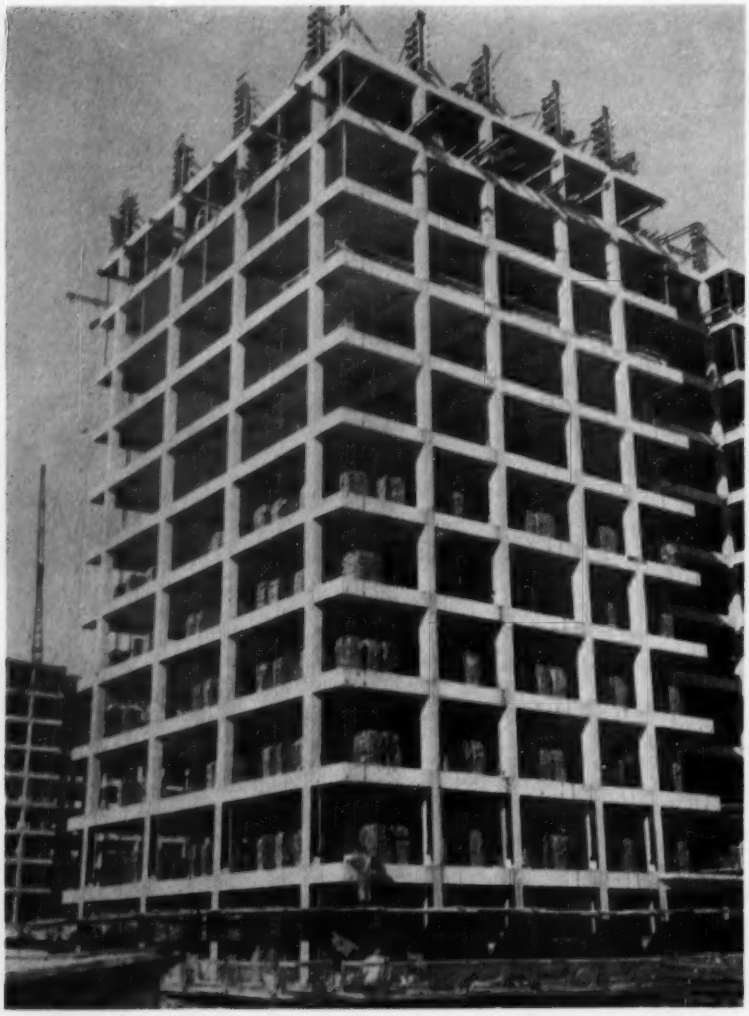
The Richardson Bay Bridge is a project of the California Division of Highways, G. T. McCoy, state highway engineer. Design was accomplished under the direction of F. W. Panhorst, assistant state highway engineer, bridges. W. M. McAuley is resident engineer on the work. Superintendent for the joint venture of the Duncanson-Harrelson Co. and Pacific Bridge Co. is G. W. "Buck" Fink.



PLUMB BOB hung from the outrigger attached to the pile shows the contractor if there is any torsional movement of the load.

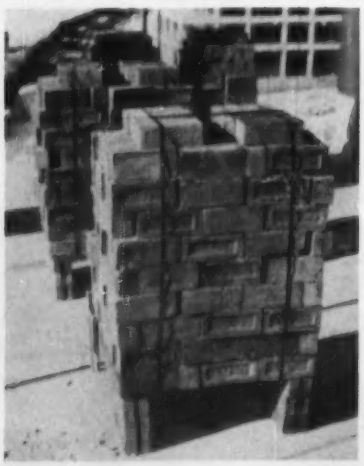


HYDRAULIC JACK supports a small portion of the load to keep it in balance. A total of six jacks is used for balancing.



CONCRETE APARTMENT FRAME is stacked with brick pallets, as forms for top floor are erected. When stacking is completed, laborers cut strapping on pallets, brick is loaded on Patent scaffolds, and bricklayers move in. Concrete work will be covered in March issue.

MATERIAL ELEVATOR with high-speed hoist carries masonry to all floors. Brick is palletized by maker and shipped in trailers.



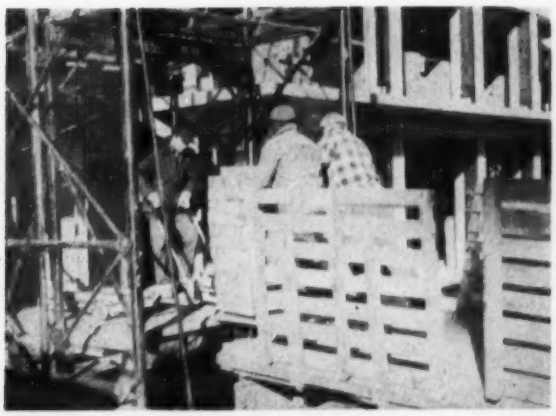
BRICK PACKAGE contains 200 brick wrapped with metal strapping. Pallet consists of plywood sheet carried on two brick legs.

Fast Brick-Pallet Handling Quickly Stacks Building

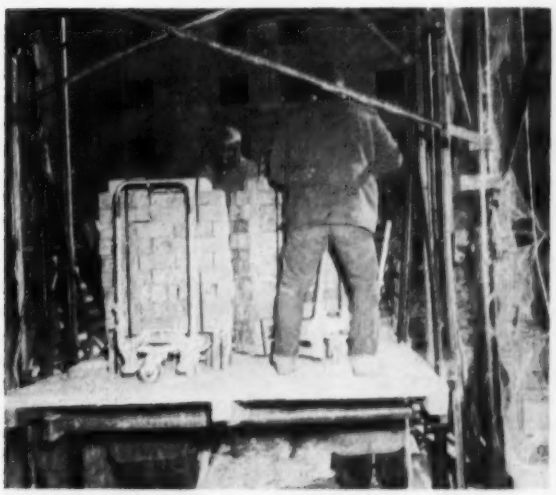
PALLETIZING BRICK right where it is made and shipping it directly to the contractor is saving time and labor on a big housing job in Newark, N.J.

Brick remains practically untouched by human hands from the time it leaves the manufacturer until it reaches the bricklayer. It arrives on the job in palletized packages containing 200 bricks. Trailers back up to material elevators, the pallets are pulled off with hand-lift trucks, hoisted to the proper floor, and stacked near the edges of the buildings. The method not only moves more brick with less labor, but it also moves it faster, eliminates rehandling, and reduces breakage to a minimum.

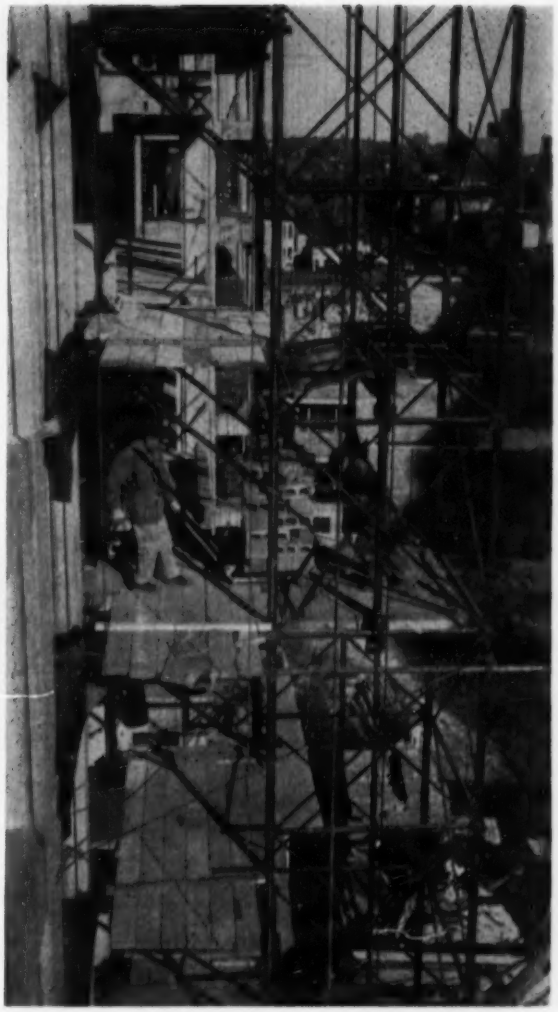
Brick packages wrapped with metal strapping are carried on simple pallets consisting of thin plywood sheets on legs of brick. To hold a pallet together, one band of metal strapping is wrapped



HAND-LIFT TRUCK carrying brick pallet off trailer is pushed and pulled on to elevator. Handling pallets right on trailer speeds stacking of building and eliminates breakage.



ELEVATOR PLATFORM with 8x8-ft deck is held at level of trailer body to permit laborers to transfer brick pallets. Wood blocks placed on ribbed-plate deck of lift truck fill gap under pallet.



OUTRIGGERS on heavy duty material elevator support deck on which pallets are wheeled off platform and into building. One-drum high-speed hoist raises 7,000-lb load at the rate of 700 ft per min.

around each leg. Palletizing by the manufacturer adds a slight cost to the brick, but it is small compared with the savings gained in handling.

The job bristles with good material-handling techniques. Mason contractor, M. & I. Rosen Inc. of New York, moves bricklayers into a building, only after he has its 13-story frame stacked from top to bottom with hundreds of neat packages of brick, tile, and block. And eight 60x300-ft buildings require a lot of masonry. When the bricklayers move into a building, they know there will be no delays. The masonry is already stacked, and the elevator can be devoted entirely to carrying mortar.

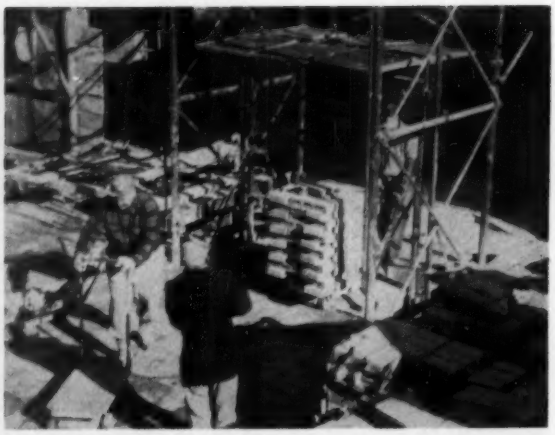
With this system, large gangs of bricklayers can be supplied continuously. They set face brick from Patent hanging scaffolds and backup block from the inside of the building. Production, of course, is way above normal.

Maintaining high production also requires mechanized mortar handling. So, even the mortar tubs are palletized. Large Jackson tubs with the capacity of six wheelbarrows are loaded under a 9-cu ft mixer and hauled in to the building on the same hand-lift trucks used for the masonry. Steel angle legs fit the tubs for palletized handling. After a tub is hoisted to the proper floor, it is set down on its legs, the lift truck is pulled out, moved under the nearest empty tub, and then taken down for another load. Laborers shovel mortar from the large tub into the group of small bricklayer's tubs in the area.

The job is a model of efficiency.

MORTAR TUB with four steel angle legs is pulled on to elevator with hand-lift truck. One tub has capacity of six wheelbarrows.

BACKUP BLOCK and partition block palletized on the site by the contractor are loaded on elevator. Ordinarily, sleds are used as pallets, but a blocked-up plywood sheet can also do the job.



NEAT PILES of palletized masonry are lined up to be moved on to the elevator. Metal plate flooring is laid on the ground to provide a smooth surface for maneuvering the hand-lift trucks.

In fact, one of its most striking features is the absence of mountains of masonry swarming with laborers slowly hand-loading units into small wheelbarrows. Instead, the working area at the base of the elevator is laid out like a production line. Palletized mortar tubs are fed in on one side and block and tile pallets on the other. Block and tile are usually stacked during the interval between brick trailers.

Block and tile suppliers in the area are not equipped as yet to palletize their materials, so Rosen does it on the job. And he does it efficiently. Masonry units are unloaded by hand but are stacked right away on pallet-like sleds which have a capacity of about fifty 6-in. block. Sleds are easily pulled to the elevator, picked up by the lift trucks, and carried into the building. At least one rehandling step is eliminated.

Another key to the efficient handling system is the Yale lift truck. Rosen uses about 30 of the 1,000-lb capacity Zephyrs on the job. One man can handle most of the loads by simple manipulation of the handle. Frame height is 6 in. in low position and 8 in. in elevated position. The unit can be pushed or pulled.

The heavy-duty material elevators also contribute a lot to the speed of the pallet handling. Made by International Hoist and Machine Co. of Newark, N. J., the sturdy elevators can lift two pallets, or about 7,000 lb, at a speed of 700 ft a minute. One-drum hoists powered by 110-hp engines operate them.

M. Gordon is chief engineer for M. & I. Rosen Co., Inc., which is headed by I. Rosen. General contractor on the eight apartments is Terminal Construction Corp. of Ridgewood, N. J. Brick is supplied by Sayre-Fisher Brick Co. of Sayreville, N. J.

Job-Made Tractor Rock Breaker

AN ABANDONED ROCK QUARRY hampered leveling operations on the Little Rock, Ark. Air Force base, so Contractor S. E. Evans, Fort Smith, Ark., rigged up this home-made rock breaker on a Caterpillar D7 tractor to help speed up his operation.

A pile-driver attachment is connected to the rear of the bulldozer moldboard by two arms that hook over the top of the moldboard and fasten by pins to hydraulic rams. Two brads are connected to the bulldozer push arms by pins through welded brackets. These brackets are mounted just back of the brace connections and are welded at an angle to line up with the width of the pile-driver attachment. The top of the braces are pinned to brackets welded to the pile driver. The blade carries the 3,200-lb pile-driver attachment.

A No. 24 single-drum, front-mounted Caterpillar cable control handles the pile driver, with a No. 25 Caterpillar double-drum rear-mounted control operating the bulldozer. Controls for the operator are mounted on the left side of the tractor.

Operator vision is aided by a 6x12-in. hole cut in the moldboard, but it was usually necessary to employ a second man to help spot the work.

The rig is readily detachable. Two men pull six pins and lift the unit off the blade.

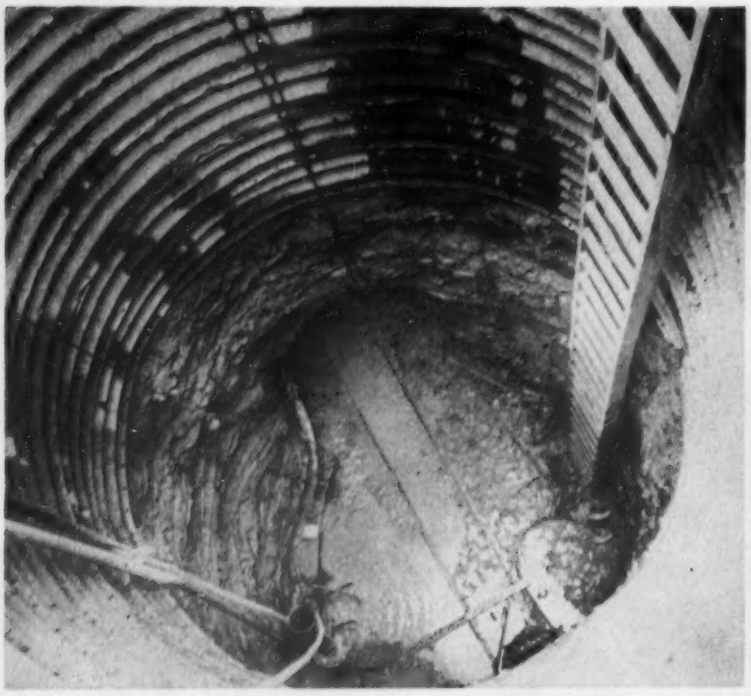
Elliptical interceptor with narrow-gage track serves construction when . . .

Ohio River Cities Build to End Pollution

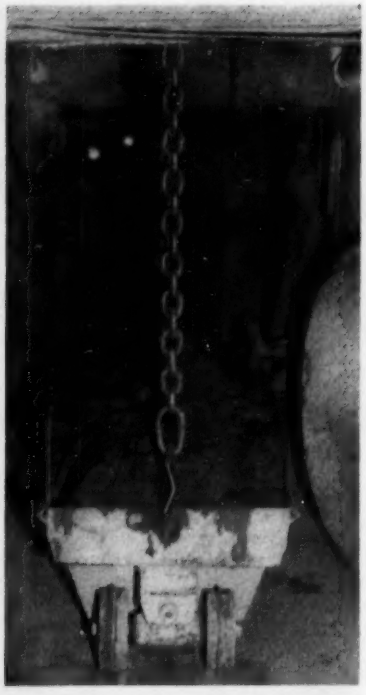
SEWER CONSTRUCTION and vehicular traffic along the same thoroughfares do not mix well—although sewer jobs usually are needed most where human activity is high. And Cincinnati proved to be no exception.

As part of the eight-state Ohio River anti-pollution program initiated several years ago, the area comprising the southern boundary of Greater Cincinnati and embracing 11 Kentucky suburbs across the river constructed a big system of interceptor sewers. Simultaneously, a sewage treatment plant was constructed 10 mi downstream at the end of the line to handle some 19,000,000 gal daily.

The James McHugh Construction Co., and the S. A. Healy Co., both of Chicago, were awarded prime contracts. They were given the job of laying some 7,000 ft of interceptor sewer pipe. This was divided into 330 ft of 30-in. pipe; 1,860 of 33-in. pipe; 3,650 ft of 42-in. pipe; 1,100 ft of 48-in. pipe, and other lengths of concrete duct work. *(Continued on next page)*



WET WORKING AREA at bottom of 54-ft shaft outlines track for small cars that roll through elliptical Lamar Pipe to bring out muck and take in and place fitted pipe-sections. From the base of the shaft, tunnels are dug 250 ft each way and paralleling city streets.



WET MUCK in little car at bottom of shaft has just been brought out through pipe already in place; will be lifted to surface.

SECTIONS OF LAMAR PIPE are unloaded at tunnel shaft by crane with an L-shaped hook. Sections are 48 in. high, but only 14 in. long —so that they can be delivered through finished tunnel for placing, eliminating excessive excavation and supports.

Rivers had to be crossed, major rail lines bisected, and bridges built to carry high-lying sewer lines. Heavy vehicular traffic from the Midwest's big industrial cities in Ohio, Indiana and Illinois rolls through the area and, to add to the general confusion and engineering difficulties, both Kenton and Campbell Counties were in the process of completing concrete and earthen walls around their respective municipalities for Federal floodwalls.

Some of these lines had to be laid 70 ft under city streets to maintain proper grades for gravity flow of sewage from the highest of the 11 cities to the lowest point downstream at the processing plant.

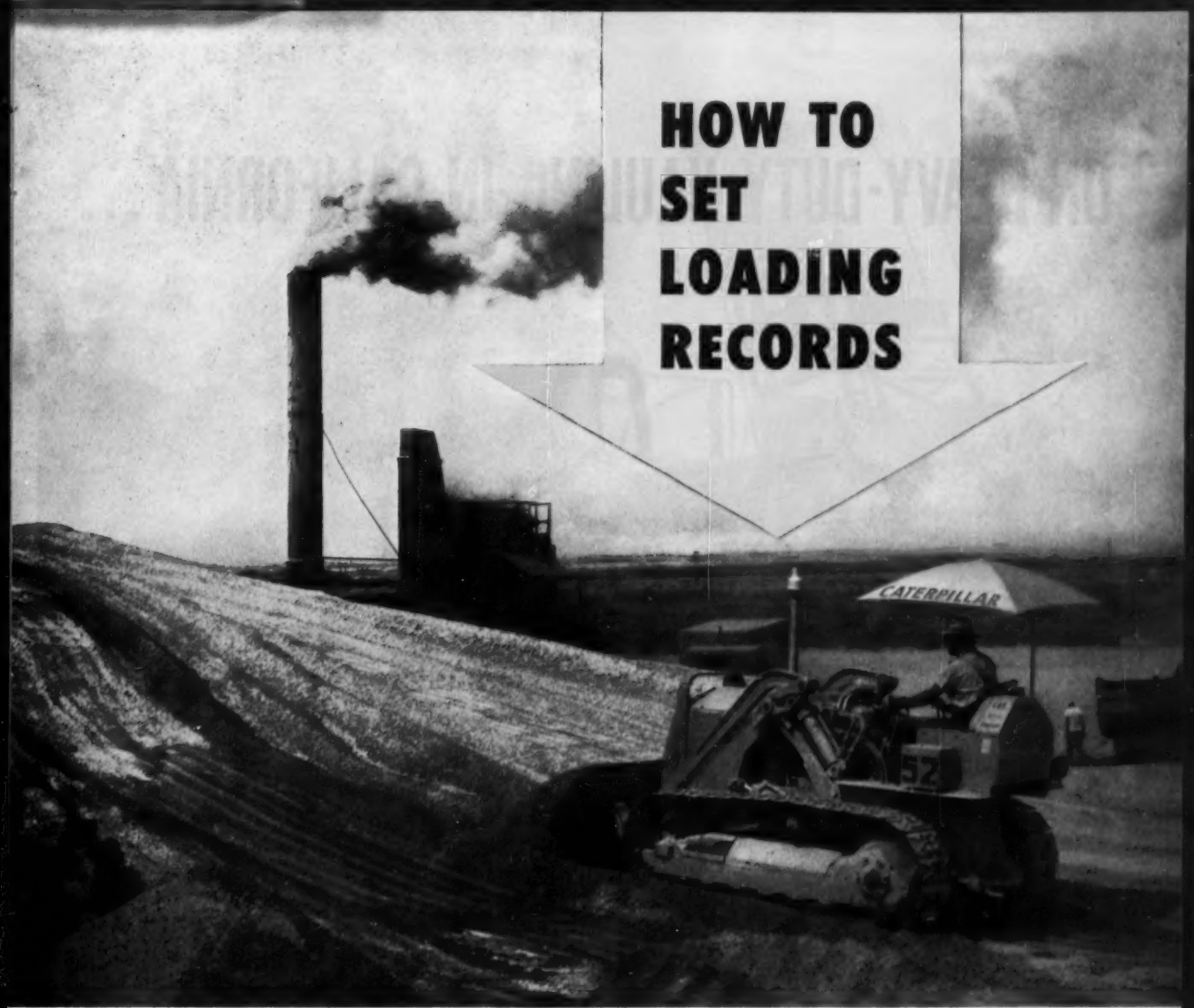
If the contractors had dug trenches, the resultant dirt would have been either piled on, or hauled over the busy city streets and would have hampered or stopped the flow of traffic.

B. J. Myren, project engineer, used the method of sewer construction developed by the Lamar Pipe and Tile Co., Saginaw, Mich. (now owned by the American-Marietta Co., Chicago).

Shafts up to 70 ft deep were sunk into the streets, the first excavated just 250 ft from the Ohio River. At this point the interceptor sewer was to pass downstream, pick up the various lateral outlets from adjacent towns and then move on to the treatment plant.

At the bottom of each of these

(Continued on page 68)



THIS Caterpillar HT4 Shovel feeds a 1500-lb. hot batch asphalt plant and loads trucks for Ideal Asphalt Paving Co., Inc., near Las Vegas, Nev. Plant production averages 500 tons per eight-hour day. This HT4 has loaded as much as 1300 tons of gravel in the same period of time!

The versatile CAT* HT4 Shovel can earn its keep at many tasks: bulk material handling, grading, excavating, light bulldozing, cleaning up. It's compact and maneuverable for work in tight places. Hydraulic controls are precise and fast-acting, and permit simultaneous raising and dumping of the 1¼-yd. bucket. Because it's designed as a unit, with the weight of the bucket evenly distributed along the full length of the tracks, it will not "dance," even with a full load.

Rugged construction is an important reason for the HT4's high work output. It's built to withstand extreme stresses and stay on the job year after year without costly down time. Carefully designed filters and seals protect the machine's Caterpillar-built precision. They keep oil and lubricants *in*, and harmful grit *out* of the engine and hydraulic system.

Ideal Asphalt is predominantly equipped with Caterpillar-built machines. They own two HT4 Shovels, a D7 and two big D8 Tractors, and three Caterpillar Diesel Engines. "We think we can make more money with the big yellow machines," says Mark C. Whiting, company treasurer. "They're dependable, and we can get parts and service when we need them. Our dealer service is the way we like it."

Your Caterpillar Dealer can give *you* the same kind of service. Ask him for black and white *proof* that the Caterpillar HT4 Shovel will do *more* work at *less* cost on *your* job than any other shovel of its size.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

ON HEAVY-DUTY HAULING IN CALIFORNIA...

"NYLON CORDS HAVE CUT ROAD

SAYS RUSH SWOAPE,

Rush Swoape Trucking and Crane Service, Bakersfield, California

"State-wide in California we haul construction equipment and materials, heavy-duty oil-field machinery, and farm equipment. At least 50% of our jobs are off the highway and include desert heat and roughest and rockiest conditions. Loads vary from 18 to 30 tons—the biggest require special permits to operate. Sometimes, to get up a 30° grade, we have to hook two trucks on one trailer. In the past we couldn't get tires to stand up to the job; on low-bed trailers they developed excess heat and couldn't be recapped even once.

"Then, we tried the first nylons on the Pacific Coast. That was six years ago. And records show that we have nylons in service with two recaps and

YOU'LL FIND NYLON IN PASSENGER-CAR TIRES, TOO! Shock-absorbing nylon cords mean extra protection against blowouts . . . greater safety on any road.

DELAYS DUE TO TIRE TROUBLE 90%"

200,000 miles on them. We expect to average 300,000 miles from each—100,000 from original tread and 200,000 with 2 recaps."

Du Pont and leading tire manufacturers, after working and testing for ten years, developed nylon cords for truck tires. Actual road experience proves nylon to be the best protection yet against tire failure. From all over the country come reports that nylon cords give more mileage, more recaps and fewer road delays. Records show nylon cords mean lower cost per tire mile.

Nylon has greater tensile strength, flex and abrasion resistance than any other cord used in tires. Nylon absorbs road shock, and gives better protection against bruise damage. Moisture seeping through cuts doesn't adversely affect nylon. Nylon takes hottest road temperatures in stride, and runs cooler.

Prove to yourself that nylon cord truck tires give substantially lower cost per mile. Ask your dealer about nylon cord truck tires today. (Du Pont makes nylon yarns, does not produce tires.)

DU PONT NYLON FOR TIRE CORD

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

FREE BOOKLET on nylon tires—write for your copy. Textile Fibers Dept., Room 11506, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.

shafts were set up working areas. Tunnels were dug 250 ft each way from the shafts and paralleling city streets. Sections of elliptical tongue-and-groove, reinforced pipe, only 14 in. long, were used for the lateral lines.

Tunnels only inches bigger than the outside dimensions of the pipe were dug. Each section of the pipe was lowered into the shaft on L-shaped hooks suspended from a truck crane. After the initial 14-in. sections were fitted, a tunnel-lugger cart was operated on a standard tunnel track. When laid sideways, the elliptical pipe could be moved on the lugger to the next section.

Mucking

The tunnel was dug out directly ahead of the pipe-fitting procedure. A muck car, operated on the same track, was filled with muck from the heading. It was then rolled back to the shaft where the crane lifted it out and dumped the dirt around the shaft. As tunnels were kept to minimum size, there was not enough spoil around each shaft to restrict movement of traffic.

The crane then lowered a 14-in. section of pipe into the shaft, and it was placed on the lugger. The pipe is supported on a heavy crossbar that is engaged in small holes on the inside of the pipe.

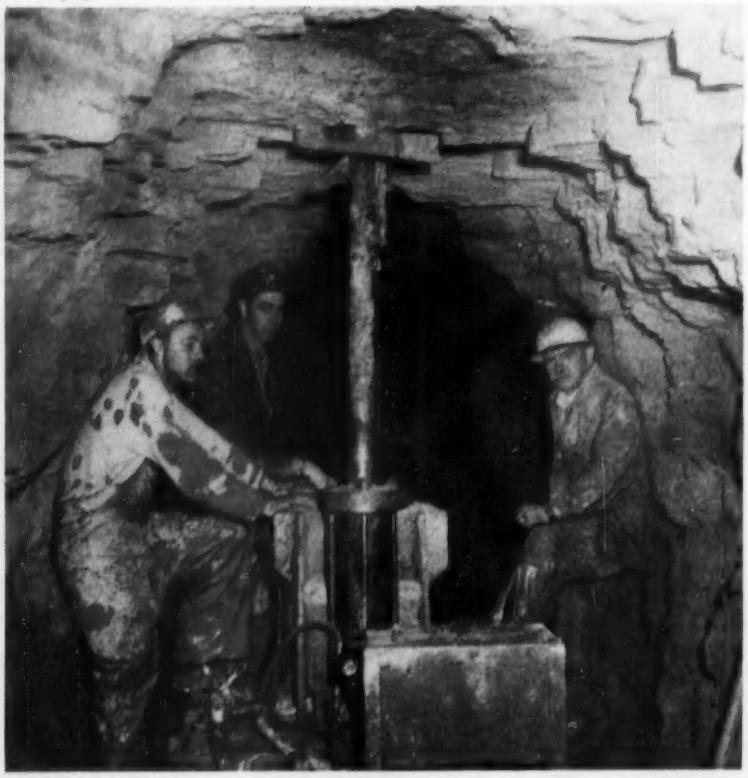
When the car reaches the heading, a hydraulically operated unit raises and lowers the pipe from its horizontal transporting position to a vertical plane. A workman helps rotate the pipe into a 90-deg turn which puts it in place vertically, ready to be pulled back into the tongue-and-groove connections.

Power is reversed on the lugger-car and, as it is pulled back, it securely fits the new section into the grooves of the section of pipe already placed. As soon as two new sections are placed, the small space left around them is back-filled with a sand-cement mixture thoroughly handpacked.

In some areas, sewer pipe had to be jacked under an existing floodwall around the two river towns. The U. S. Corps of Engineers had ruled previously that no tunnels could be cut under the earthen and concrete levees.

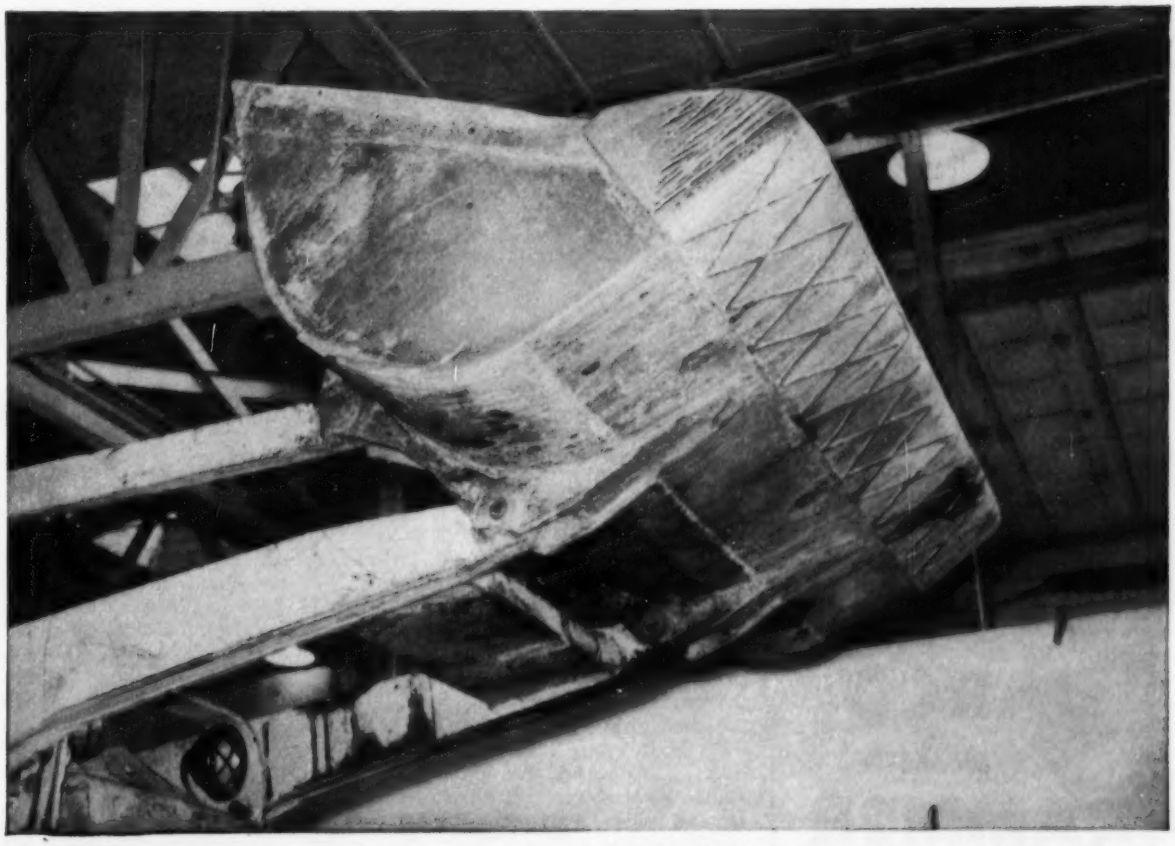
Hydraulic jacks pushed the sewer line along and, as the dirt piled up inside the conduit, it was shovelled out and hauled to the surface. This operation was continued through 60 ft of earth until

(Continued on page 70)



HEADING THROUGH ROCK, miners are protected by air-operated jack bearing against roof as a safety measure. Lamar system could not be used everywhere as many different conditions arose.

ONE OF THE LARGEST TUNNELS, driven under Covington (Ky.) streets, lined with concrete. Contractor jacked a connecting pipe 60 ft under river floodwall at far end.



Hard-faced with Stoody 21 along the lip and side plates, this scoop holds size and load capacity. A self-sharpening lip makes it easy to load.

PROTECT THE LIP AND SAVE THE SCOOP

—A simple Stoody hard-facing procedure for loaders

Protecting scoop loaders from wear is a relatively simple hard-facing job. Results are generally two-fold; 1) The bucket holds original size, thus retaining full capacity and 2) lips become self-sharpening, insuring easier loading.

MANY TYPES—Although many scoop loaders are manufactured today, hard-facing procedures are similar on all. Wear usually concentrates along the bucket lip and extends up both inner and outer sides of the end plates. (Caution: Hardened steel lips as furnished by some manufacturers are not suitable for welding until surface hardening has been worn through.)

End plates are protected inside and out with a series of parallel stringers or cross-hatched beads of Stoody 21.

HARD-FACING DETAILS—A single ¾" wide band of Stoody 21, along the top edge of the lip, accomplishes two purposes:

It provides maximum wear protection for intense scuffing and abrasion against earth, paving materials, etc.

It makes the scoop self-sharpening by keeping the top surface from wearing as rapidly as the base metal.

End plates are hard-faced by a series of parallel or cross-hatched stringers, both inside and outside and along the leading edge.

Replace severely worn lips with steel plate cut to size and hard-face as described above.

Stoody 21 is suggested for protecting scoop loaders because of its high abrasion resistance and impact strength. These two features are a direct result of high alloy content—yet Stoody 21 is a low cost electrode. This and other equipment-saving applications are described in the Stoody Guidebook. Ask your Stoody dealer for a copy (consult the "Yellow Pages" of your phone book) or write direct.

The scalloped edge on this scoop is a variation that has been found to give excellent results under some conditions. Note the hard-facing material along the edge.

TRENCHING ALONG RIVER shore line for main trunk line to disposal plant downstream was simpler than city tunnel work. Railroads and old sewers complicated the project.

the river side of the wall was reached.

Bridges had to be built over the Licking River in some spots to carry the sewage from one county to the other. In some areas, tunnels had to be cut under the main lines of the Louisville and Nashville, Chesapeake and Ohio and Baltimore and Ohio railroad lines. In one place where the project paralleled the Licking River, the engineers found the remains of an old railroad track, buried 50 ft under the surface.

At another point, they ran into an uncharted old sewer line with walls of stone 4 ft thick. This required extra time and effort that had not been anticipated, as this also had to be tied into the interceptor.

Laterals in Campbell and Kenton Counties in Kentucky were connected to interceptor lines, one on each side of the Licking River that empties into the Ohio opposite the busy Cincinnati waterfront. These two interceptors had to be connected by a large pipe across the river—a distance of 350 ft.

Investigations showed that under the silt of the river bed was bed rock. It was too long and costly an undertaking to tunnel under the river, so it was decided to blast a channel and then drop the connecting pipe into place.

The Licking River is open to commercial traffic for several miles. River barges navigate daily to factories and industrial sites up the river. The waterway could not be blocked at any time. To overcome this obstacle, Myren spotted a working barge on the river where the channel was to be blasted.

The barge was moored at four points, held in place by lines extending to the shore to "dead-men" placed on the two banks. When a river boat came through, one line was lowered and, before the second was dropped, the first was re-secured. The barge was held in place at all times by at least three lines.

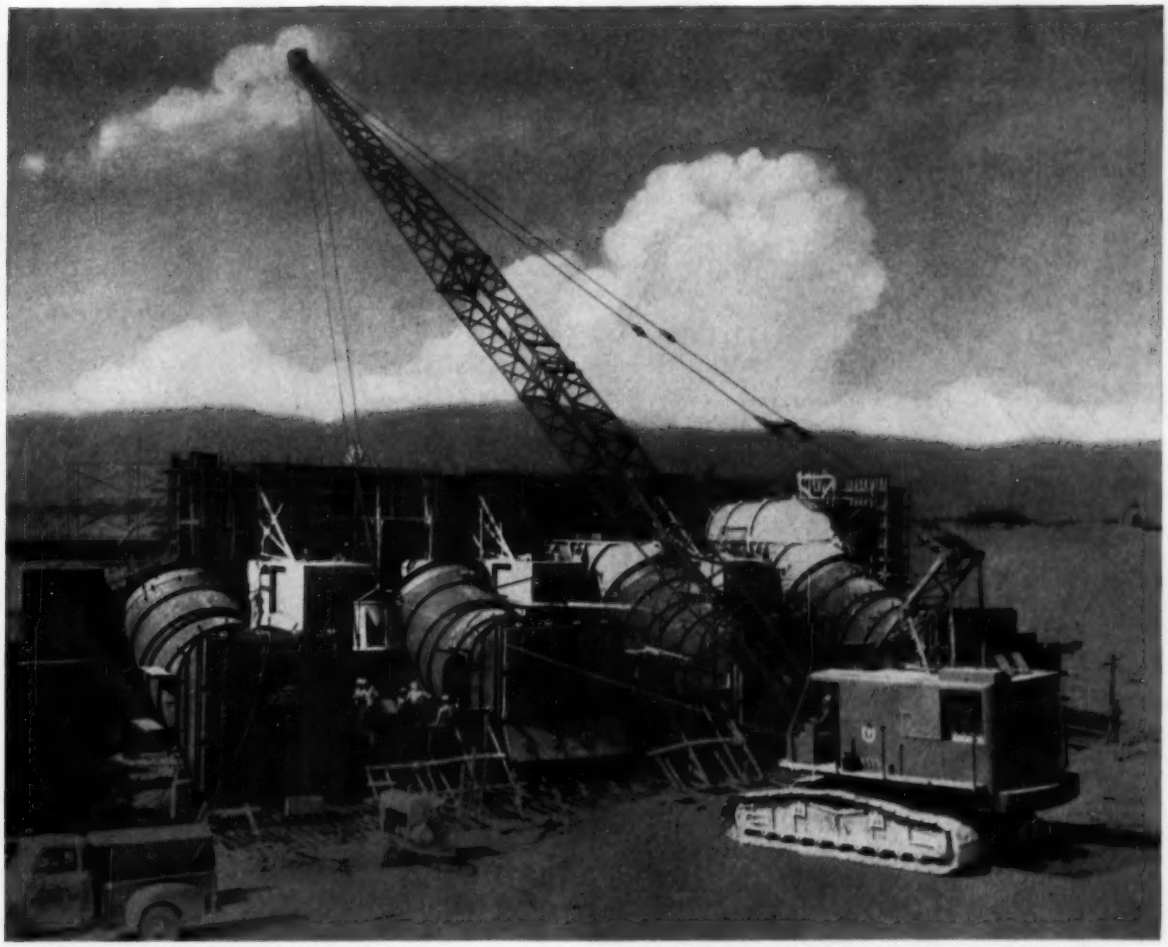
Cylindrical shields were sent down at 5-ft intervals, and holes drilled for dynamite. This 5-ft pattern was maintained all along the 350-ft width of the channel. A similar line was made every 5 ft in an adjacent area, but 12 ft across from the first pattern, and in staggered alignment. When the charges were set off, a channel was blown out of the solid rock 7 ft wide and 12 ft deep.

The ends of the tunnels on each shore then were opened, and connecting sections bolted on. A diver took down three joined sections at a time and bolted them to sections already laid. These individually bolted steel pipe-sections were placed across the 350-ft wide mouth of the river to create one watertight unit joining county to county.

A clam shell then back-filled the rock blown from the channel by the blast, and the silt in the river rapidly filled in smaller crevices.

In other areas where the floodwall was yet to be filled in, instead of sinking shafts, the contractors had to build what appeared to be towers of concrete. However, when the earth is placed on the levee area these openings also will be covered with ground.

In some areas, tunnels had to be drilled through rock formations.



K-595 SPOTTING CONCRETE BUCKET—operator works with greater speed and safety because of greater "live" weight built into every Link-Belt Speeder. All-welded, stress relieved construction gives greater strength per pound. Alloy cast-iron clutch shells assure superior friction, longer lining life. Independent rapid boom hoist has power control up *and* down.

Now every Link-Belt Speeder shovel-crane has *Speed-o-Matic*®

—no lag, no jerk, no strain—

IT'S FULL POWER HYDRAULIC CONTROL

Today Speed-o-Matic controls are *standard equipment* on every size rig in the entire Link-Belt Speeder line! Full power hydraulic control is your key to 25% extra production . . . more consistent profits in the ½ to 3-yard, 6 to 60-ton work range. Here's why:

- REDUCED OPERATOR FATIGUE—fingers, instead of muscles, put full power to work.
- SMOOTHER CYCLES—complete cycle is one fluid motion.
- MORE ACCURATE CONTROL—operator always safely *feels the load.*
- REDUCED CLUTCH ADJUSTMENTS—clutch piston is self-compensating for normal lining wear and heat expansion.
- 150 WORKING PARTS ELIMINATED—maintenance costs cut.

Join thousands of alert owners who are making more money with Link-Belt Speeders. Contact your Link-Belt Speeder distributor for details. LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa.

LS.750

LINK-BELT SPEEDER

Builders of a complete line of crawler and rubber-tired shovel-cranes

Blaw-Knox Bituminous Paver laying base course on the Garden State Parkway in New Jersey.

The State of Pennsylvania has always been very particular about its asphalt roads. The Blaw-Knox has been approved by the Highway Department of the

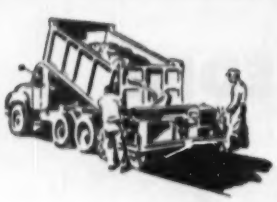
The Outer Drive Extension in Chicago—a county job—has the Blaw-Knox Paver helped to complete the job before the deadline.

DO YOU WANT

BLAW-KNOX
Bituminous Paver
Check List

If you don't have these Bituminous Paver advantages you are losing money!

- ***Wheel Steering*** **with long wheel base eliminates the over-steering of crawlers and assures greater accuracy, a smoother course and better joints.**
- **Wheel mounting eliminates the 600 to 700 parts characteristic of crawlers.**
- **Wheel mounting absorbs vibration, reduces chatter in screed and wear and tear on machine.**
- **Dual Controls — handle machine from either side.**
- **Handles boxcar trucks with ease.**
- **Compacts to uniform density and automatically measures and levels.**
- **Long wheel base and leveling principle equalizes ordinary subgrade irregularities.**
- **Simpler, more easily adjusted crowning device.**
- **Easily tows to new location and gets back to lay parallel course in a quarter of the time required for crawlers.**
- **Easy conversion for increased width.**
- ***Outproduces any other asphalt spreader on the market today.***

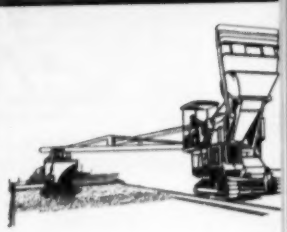


ADNUN JR.

For those driveway and parking lot jobs the Adnun Jr. will make money. Power saves truck time. Continuous Course Correction gives a smoother surface—and it tows to the job — no trailer is required. Ask for a Catalog.

MULTI-FOOTE

The MultiFoote Concrete Paver has long been a standard for highway paving. Shovel-type crawlers with self-cleaning action, fast charging and discharging, and better vision, mean greater output on the job. Ask for a Catalog.



TO MAKE MORE MONEY ON BLACK TOP PAVING?

● If you are planning new equipment for your black top paving jobs this spring you will be making a serious mistake if you do not get full details on the Blaw-Knox Bituminous Paver.

There has never been anything like it for speed of spreading and for smoothness of surface. Wheel design at once improves control and eliminates some 600 to 700 parts present in crawler units making upkeep easier and less costly.

Wheel design simplifies transportation and reduces truck standing time by easier, faster relocation on the job. With the Blaw-Knox you pave profitably with *any* mix, hot or cold. You pave with automatic leveling and compact to uniform density. You pave with a permanent bond between strips and you pave with the only paver that gives you positive traction at *all times.*

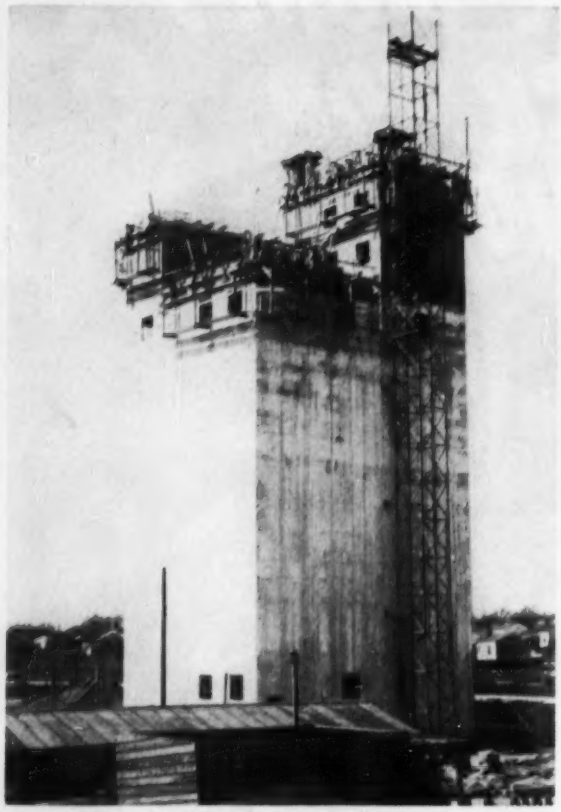
Even if you feel your present equipment is adequate you may cut your costs and increase your profit by replacing it with a Blaw-Knox. You owe it to yourself to get all the details.

On wheels it will pave for less

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1910 State Street
Hunda, New York

BLAW-KNOX

Versatile Slip Form Handles Complicated Building Interior

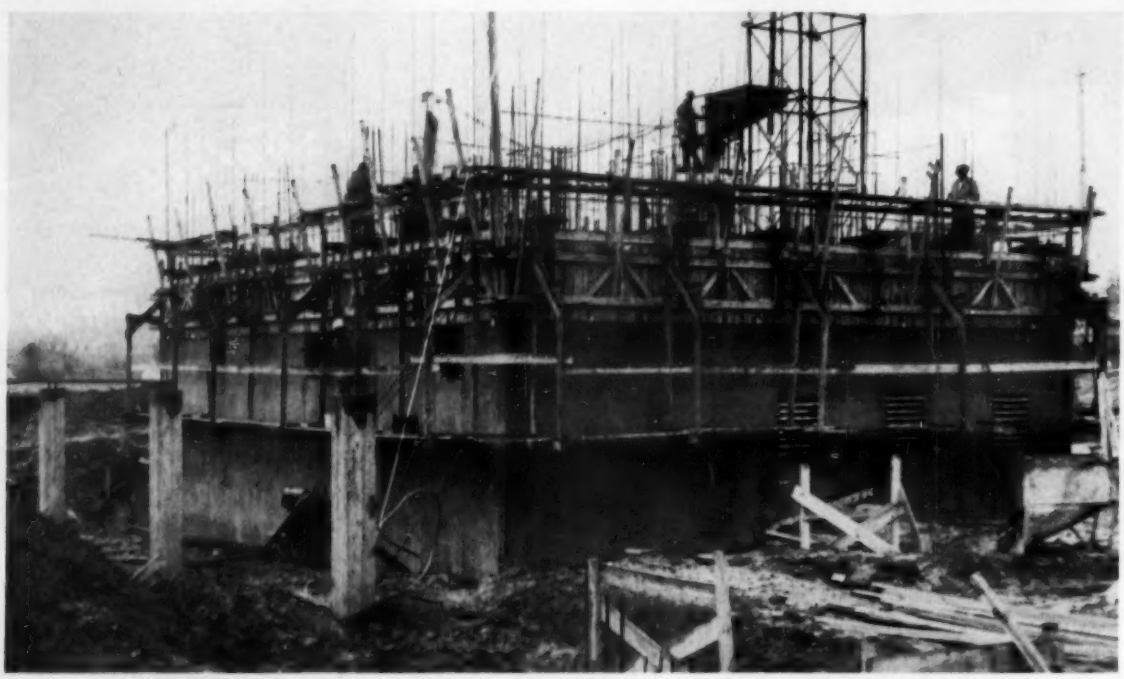


FEED MILL 113 ft high nears completion, as concrete is placed continuously in rising slip form. The setbacks at the top of the structure are made by cutting sections from the main form and holding them. Pre-planning reduces cutting time to less than 15 min.

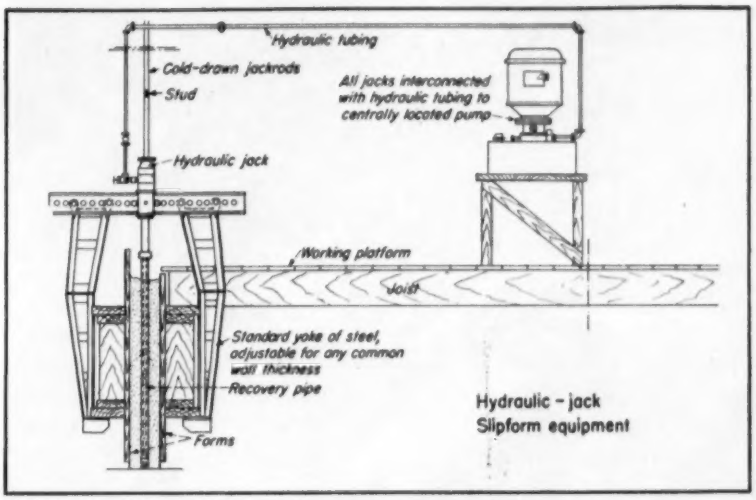
CONTRACTORS who still think that slip forms are used only for silos and towers should have seen the way a new feed mill was constructed near Gainesville, Ga. In less than 10 days' time, Gulf States Construction Co. of Atlanta raised a 41x52-ft building to its full height of 113 ft. And they built in windows, doors, setbacks, and a complicated network of interior beams and columns along the way.

The wood slip form with steel lifting yokes was raised smoothly and accurately with a maximum of 97 Heede Concretor hydraulic jacks, all powered and controlled from one pump. At the setbacks near the top of the building, the slip form was held each time for about 15 min while precut sections were severed. Hydraulic lines leading to these sections also had to be cut quickly. Special fittings built in at the start permitted the fast change.

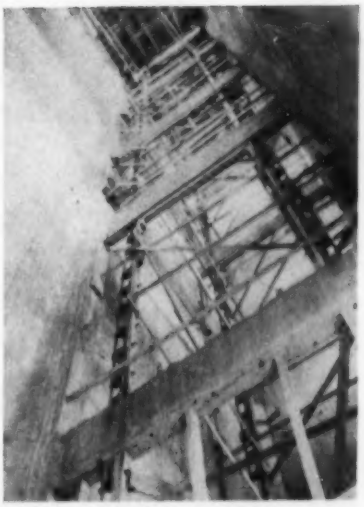
Most of the lower three-quarters of the building was honeycombed with feed bins, whose 6-in. walls were poured with the slip form. In the top quarter, beams for supporting the seven future floors were poured with the rising form simply by removing the bulkheads at the columns and placing bottom form plates to support the concrete. Finishing was done from scaffolds suspended from the slip form.



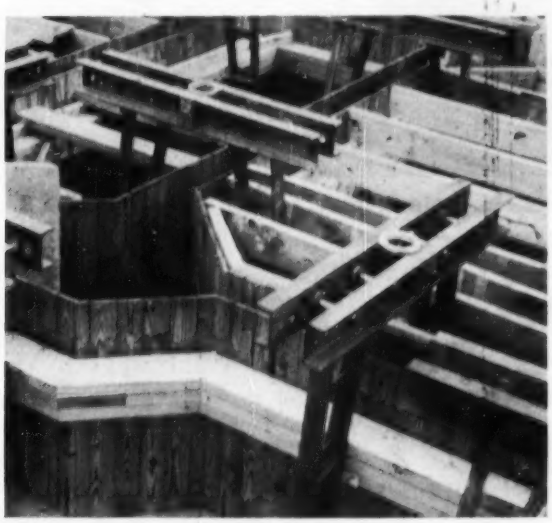
WOOD SLIP FORM 41x52 ft. is raised by 97 hydraulic jacks working through steel lifting yokes. Ready-mix concrete is hoisted to hopper, buggied to forms, and vibrated into place. Finishing is done from scaffolds suspended from slip form.



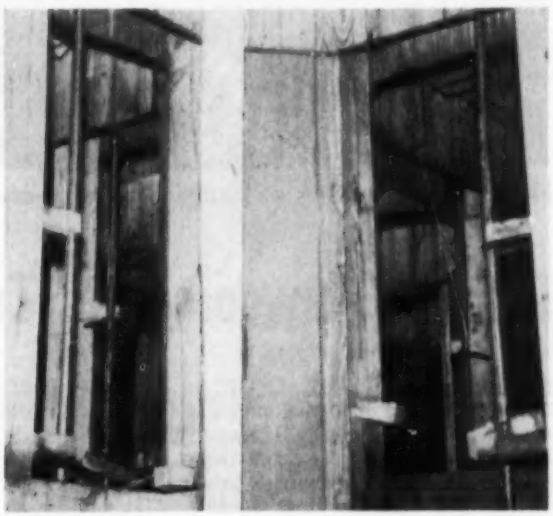
FORM-RAISING EQUIPMENT, made by B. M. Heede, Inc. of New York, features hydraulic jack that climbs a smooth steel rod by alternate gripping of two sets of jaws.



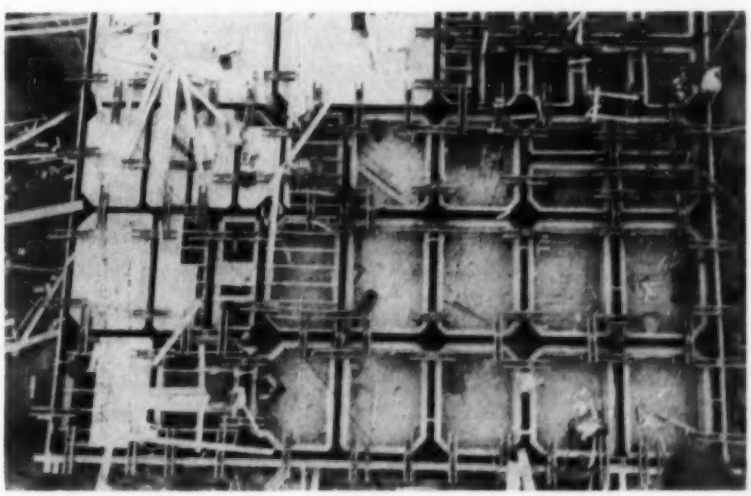
CROSS-BEAMS for supporting future floors are easily poured with rising slip form.



ADJUSTABLE STEEL LIFTING YOKES are placed over walers, as wood slip form is assembled. Oiling form assures good finish.



STEEL RODS on which hydraulic jacks climb have to be braced laterally in open areas. Wood posts with J-bolts do the job.



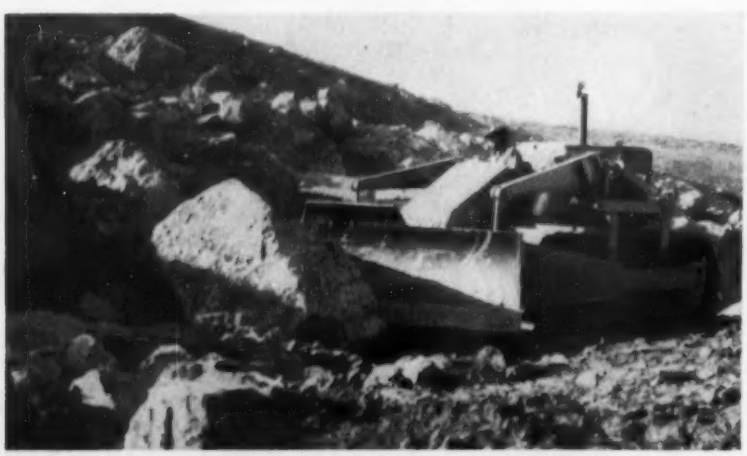
MAZE OF OPENINGS for interior walls and columns is shown in view taken from high tower. Men erect working platforms between openings. Complexity of form shows the necessity for hydraulic lifting control.

Heavy attachments or excessive loads are no obstacle with...

Eimco's Newcomer to Track-Type Tractor Field

EIMCO MODEL 105 TRACTOR, a new baby-giant in the construction field, claims a group of "firsts" in design and construction that make it attractive as a high-producing machine. The features include: Unidrive transmission which makes it possible to shift gears under full power while in motion, and instant reversals.

No steering clutches are used. Clutches never need adjustments, and the master clutch has been completely eliminated. Independent track control through dual final drives is provided so that one track may run forward, while the other runs in reverse for true spin-turns. Two small levers control all the motions of the tractor, making possible a realistic "finger-tip" control.



EIMCO TRACTOR BULLDOZER equipped weighs 18 tons. Both straight- and angle-dozing blades are available for hydraulic operation. Operator visibility is excellent.

The model 105 is equipped with a 4-cyl 120-hp Cummins diesel engine with a matched Allison torque converter. Eimco engineers claim this tractor develops a higher maximum drawbar pull per engine belt hp than any other tractor. Tractor with bulldozer develops 32,300 lb drawbar pull, with a maximum of 45,000 lb for zero track slippage. Full drawbar pull can be obtained even at a standstill. The basic tractor is built to standard SAE mounting dimensions so that any attachment made with standard SAE drilling will fit the prime mover.

According to Eimco, the model 105 has been thoroughly tested under most severe conditions.

What they're saying about LORAIN "E-Z" CONTROLS

"Switching between our other machine and this new 'TL' makes me really appreciate these new, easy controls."
Operator Al Hallett, Lorain County Excavating Co., Elyria, Ohio

"Hell, I wouldn't kid you . . . this 'TL' is a sweet running machine."
Operator Del Marous, Trebec Excavating Co., Euclid, Ohio

You'll be hearing more and more statements like these as more and more operators discover the surprising and extremely easy operation of the new Thew-Lorains in the ½ and ¾ yd. classes. An entirely new idea in the operating controls of these machines has reduced operating effort by as much as 70% . . . plus faster machine response and higher output. But — the actual proof is in the field, where many new Lorains are swinging, hoisting and moving so much easier and faster that operators are putting their "OK" on them enthusiastically. If you believe a happy, satisfied operator will move more dirt and make more money for you, check with your nearest Thew-Lorain Distributor.

FAST AND EASY DOES IT ...HERE'S HOW!

1. Streamlined levers on roller bearings.
2. Simplified linkage with anti-friction bearings.
3. New shoe clutches that require no dead-end adjustment.
4. New Hoist and Drag Shoe Clutches with spring-loaded live ends — easier to operate, reduces adjustment.
5. New clutch cones toggle-in clutches without latches or other effort than applying the hand lever.

HYDRAULIC POWER CRAWLER CONTROLS FOR . . .

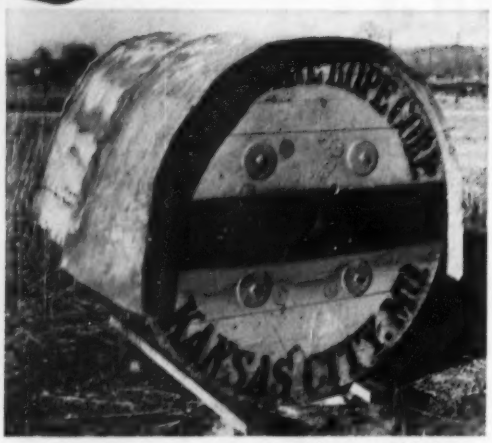
6. Swing Lock.
7. Tread Locking Pawls.
8. Jaw Clutches for selection of Swing or Travel.
9. Crawler Steering.

GET THE FACTS TODAY

THEW LORAIN.

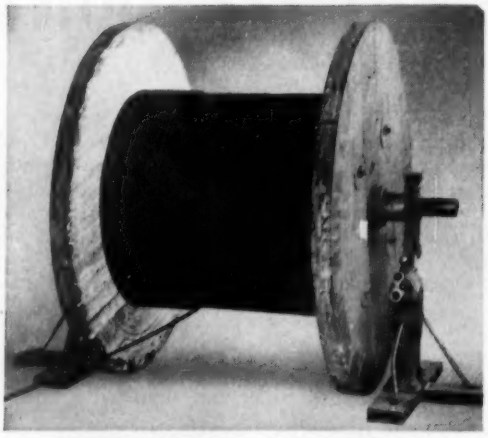
THE THEW SHOVEL CO., LORAIN, OHIO

Tuffy® tips on getting



Store Rope Like This

Keep spare rope in a dry, sheltered place free of dust, vapors or fume-laden air. If stored out of doors, set reel on blocks off the ground. Clear away weeds and grass and protect with a waterproof covering as shown. Check each month for rust caused by moisture collecting on the rope. Paint with a heavy crankcase or cylinder oil if rust is discovered or even before it shows up if moisture is present.



Unwind Like This

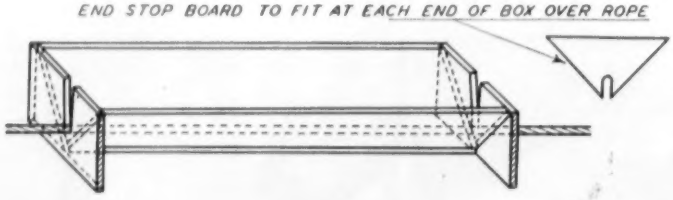
When getting ready to install the rope, special care should be taken to see that the reel is set up for smooth, easy unreeling. Set reel up on jacks as shown above and unreel so the rope pulls off from the bottom of the reel—*not* from the top. Coils should be put on a swift or rolled on the ground to pay off the rope. Kinks or "doglegs" may result from incorrect unreeling, seriously damaging wires of the rope and greatly reducing the ultimate life.

Always Keep Rope Lubricated

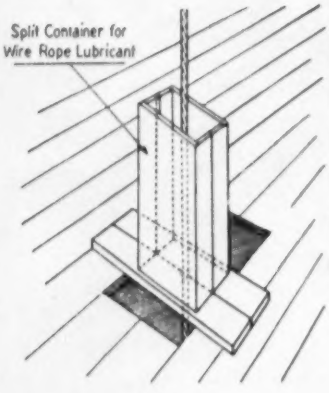
Rope That Is Stored for long periods of time should be lubricated during installation. If it is not possible to lubricate stored rope very often, apply a sealing compound to hold the lubricant that is already present.

Rope In Use can be lubricated most economically without removing it from the equipment on which it is operated. Lubricate rope as often as it needs it—service conditions determine the frequency.

Use Lubricant Hot or Cold, depending on its penetrating qualities. Your local oil company engineer will be able to recommend an oil that will actually penetrate to the working parts of the rope, and not just form a coating that peels off the first time your rope runs through a sheave.

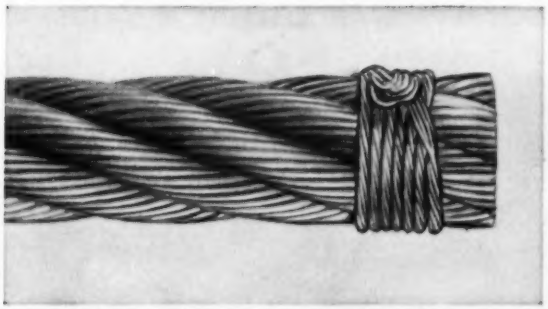


Two Home-Made Oiling Devices



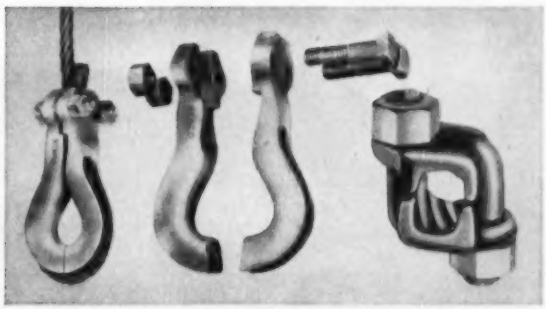
These two oiling devices can be used without removing the wire rope from the equipment on which it operates. One is for vertical ropes, the other for horizontal ropes.

extra service from *Wire Rope*



Seize Tightly For Cutting

Cutting can throw the strands out of fabricated position and, in time, result in kinks or doglegs. Seizing the rope securely before cutting, as shown above, assures that no movement of the strands can occur when you make cuts. Because most ropes are now preformed, and stress free, only one seizing wire at each side of the cut is needed.



Attaching By Clipping

The fittings you use on wire rope can handicap it or enable it to work at full efficiency. Fittings which derive holding power by crimping action are harmful to the rope. Shown here are two rope clamps. One is a combination clamp and thimble. Both provide snug saddling of the rope and grip larger and uncrimped bearing surfaces so tightly that the loads are carried almost solely by the force of friction.

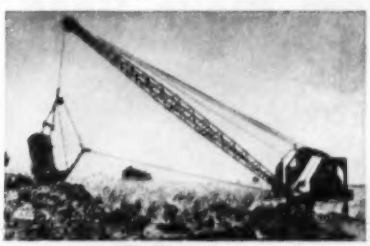
Available To You: The *Wire Rope* Experience of Specialists

Working with users to whip wire rope problems has provided Union Wire Rope engineers a wealth of on-the-job experience. Out of this priceless experience has come a family of wire ropes for special purposes. Into them is put the grade of steel, the rope construction and operating characteristics which laboratory research and field development have proved best for the particular purpose for which made.

Forget Complicated Specifications - Say Tuffy

Tuffy Scraper Rope

Special construction assures resistance to drum crushing and the strains caused by angle pulls through swivel-mounted sheaves, rapid line and shock of load on slack line.



Tuffy Dragline

Outer wires offer large area to resist abrasion . . . inner structure made for flexibility. The result is a rope that casts freely, fights off shocks and line pulls.

Tuffy Dozer Rope

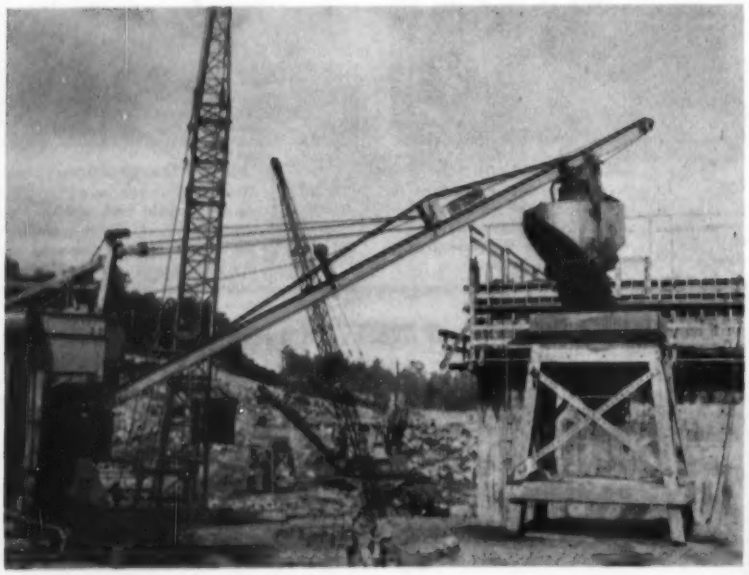
Get extra dozer rope service — mount a 150' reel of Tuffy on your dozer, feed through only enough to replace damaged section on the drum. ½" and 9/16".

Tuffy Slings & Hoist Line

Machine braided slings that consistently keep costs down, keep safety records clear. A tough, flexible hoist line. A balanced team.

Because of their flexibility and high production . . .

Highway Pavers Make Good on Dam Job



CONCRETE BUCKET riding on high-lift boom of Multifoote 34E paver dumps into hopper. P&H crane loads its bucket under the hopper and swings it to point of placement.

HIGHWAY-TYPE PAVERS are proving to be flexible, productive units for mixing concrete on a group of small, strung-out dams in northern New York. They move up close to the construction, and their production is high.

The units are playing an important role in the $25,000,000 power development of the Raquette River south of Potsdam. Niagara Mohawk Power Corp. is constructing six dams over a 7-yr period, which requires that two or more dams be under way at the same time. They are spaced only 3 mi apart, and require an average of less than 30,000 cu yd of concrete.

Pavers were selected only after all conventional methods of mixing and placing had been considered. Cableways and trestles would have been uneconomical because of the small amount of concrete. A central mixing plant could have been set up at each dam

(Continued on page 83)

ADAMS

World's Most Advanced Line of Motor Graders

Only ADAMS gives you all these time-saving, work-producing features—in all models

FULL CONSTANT-MESH TRANSMISSION—Easy shifting... Heavy construction... Finest ever put into any grader.

8 FORWARD SPEEDS—Provide right speed for every operation—up to 26 mph. for fast transport.

3 CREEPER SPEEDS (optional)—¼ to 1¾ mph. Gear grader to slow-speed work using full engine horsepower. Reduce shock and tire and clutch slippage.

4 REVERSE SPEEDS—Up to 13 mph.—save valuable production time backing up on shuttle work.

DUAL BRAKING SYSTEM—Hydraulic braking action applied to transmission as well as wheels—quicker, safer stops.

RUBBER-MOUNTED ENGINE—Floating power—no vibration transmitted to grader—operator efficiency increased.

ADAMS DIVISION, LeTourneau-Westinghouse Company, Indianapolis, Indiana

Available in 4 Improved Models • 75 H.P. to 140 H.P.

Make your next motor grader an

ADAMS

NEW! The most advanced, best engineered trowel on the market!

Roto-Trowel

FOR FASTER FLOOR FINISHING

STOW

Model G-34 Gasoline
Also available as
Electric model E-34

Here's an easy-to-operate unit that practically eliminates the need for hand trowelling. With floating blades attached, STOW Roto-Trowel drives air pockets out of the concrete, brings up the moisture to produce an excellent surface. With finishing trowels in place, adjusted for the specific conditions of the job, the STOW Roto-Trowel provides a smooth, level, even finish.

PITCH CONTROL—provides exact adjustment of trowel pitch while machine is in motion.

PLASTIC GRIPS on wide handle for greater ease of control.

Conveniently located **THROTTLE CONTROL.**

EXCLUSIVE DEAD MAN CONTROL stops trowel blades the instant the operator lets go of the lever. Leaves engine running. Prevents accidents.

GUARDED BELT.

HANDLE ADJUSTABLE to right height for operator. Can be raised vertically for storage and transit.

Briggs and Stratton 4 cycle, "L" head, single cylinder air-cooled Gasoline Engine, 2 H.P., at 3600 R.P.M.

Sturdy **STATIONARY GUARD RING** does not rotate. Permits close-to-wall work. Prevents accidents.

Long lasting, quick-change blades are **REVERSIBLE** for double-life.

EXCLUSIVE TROWELLING SPEED, 25 to 100 R.P.M.

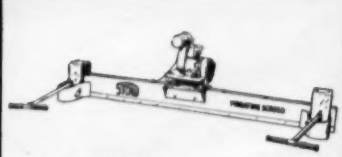
With **ELECTRIC CHANGE-OVER KIT,** a gas unit can be converted to an electric model in just one hour!

Write today for Bulletin 546 and complete information.

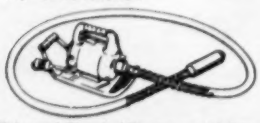
STOW MANUFACTURING CO.

31 Shear Street, Binghamton, N.Y.

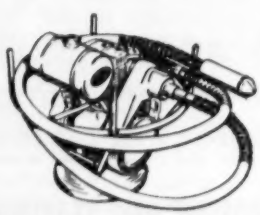
For information on the complete line of Concrete Vibrators and Screed Equipment —Write for Bulletin 552!



Stow Screeds eliminate costly hand puddling, spading . . . leave the surface in practically finished condition.

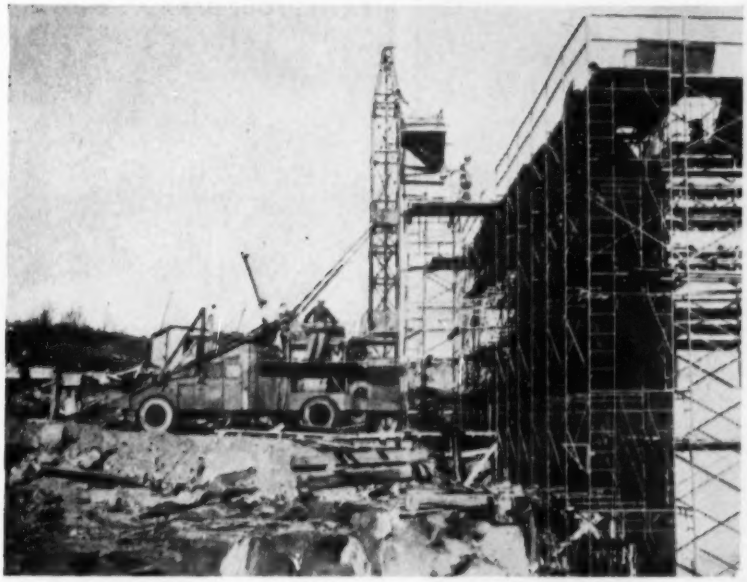


Universal Electric Vibrator model 8U . . . convenient, lightweight, efficient vibrator, an asset on any construction job.



AG heavy duty Gasoline Vibrator with plug-in casing connection and combination ring guard.

G40-C Concrete Pedestal Grinder, the perfect machine for finish-grinding quickly and efficiently. Lowest priced portable on the market.



ELEVATING TOWER on self-propelled Mixermobile is moved up close to steel scaffolding for pouring concrete powerhouse walls. Batch trucks supply both pavers and Mixermobile.

EXTRA SECTIONS OF TOWER are added as the powerhouse walls are built up. With a 100-ft tower, concrete is elevated the full height of the building and then placed with buggies

to load buckets mounted on trucks. But the plant would have been too expensive, and bucket-carrying trucks could not have maneuvered over the strung-out dam sites as well as small batch trucks. Another method considered was a fleet of ready-mix trucks charged by a batch plant at each dam. The size of the fleet, plus the difficulty of transferring the concrete to crane buckets, made this plan impractical.

Although the highway paver had been untried on dam construction, the idea was adopted. The project is now half completed, and the pavers are performing even better than expected.

Raquette River Construction Corp., contractor on the job, moves a Multifoote 34E paver in on each side of the monolith to be poured. With high-lift booms, the pavers easily charge 4-yd hoppers. P&H cranes swing 2-yd buckets under the hoppers, pick up a load of con-

(Continued on next page)

BUTLER BATCH PLANT is charged by two bucket elevators, one for cement and one for aggregates. Bulk cement silos store 1,000 bbl.

crete, and swing it to the pour. Buckets do not have to be switched each time. The operation is smooth and efficient, and production averages more than 2,500 cu yd per week, working five 8-hr days.

As an added bonus, the batch-truck system also supplies a Mixermobile on the job. Equipped with 100-ft elevating tower, this self-propelled mixer can place all concrete for the powerhouse walls without a crane.

Supplying the pavers and the Mixermobile at each dam is a Butler batch plant. Aggregates, produced at Niagara Mohawk's nearby crushing, screening, and washing plant, are trucked to the batch plant and dumped from an overhead trestle. An 8-ft dia reclaiming tunnel made of Armco corrugated pipe extends the full length of the aggregate stockpiles and houses an 18-in. belt conveyor.

Sand and stone are carried by conveyor to a closed bucket elevator which charges the bins of the batch plant. Cement brought in by Trailmobile carriers is handled by another bucket elevator. Cement silos at each plant provide storage for 1,000 bbl. Bulk fly ash from Niagara Mohawk's Oswego steam plants is added to batch trucks from a separate bin.

M. Morris is resident engineer and A. Willard is assistant resident engineer for Niagara Mohawk Power Corp. L. Wagner is project manager, and N. Stone, L. Hewitson, and E. Martin are superintendents for Raquette River Construction Corp.

Thermoid Hose designed specifically for construction jobs

Thermoid designs and manufactures many types of hose built to give longer service and lower operating costs in a wide variety of specific applications. Here are three that are ideal for rugged quarrying and construction work:

THERMOFLEX—Mandrel-built air hose for extreme service and direct connection to compressors. Smooth, black abrasion-resistant cover.

VERSICON—Most versatile hose ever developed. Handles air, water, oil, gasoline, dilute acids and gases. Ideal for use with air-operated tools.

#325 CL SUCTION HOSE—Heavy duty wrapped hose reinforced with rugged wire enclosed in a woven cord carcass. Long wearing tube and cover resists weather and abrasion. Can be restored to shape after crushing.

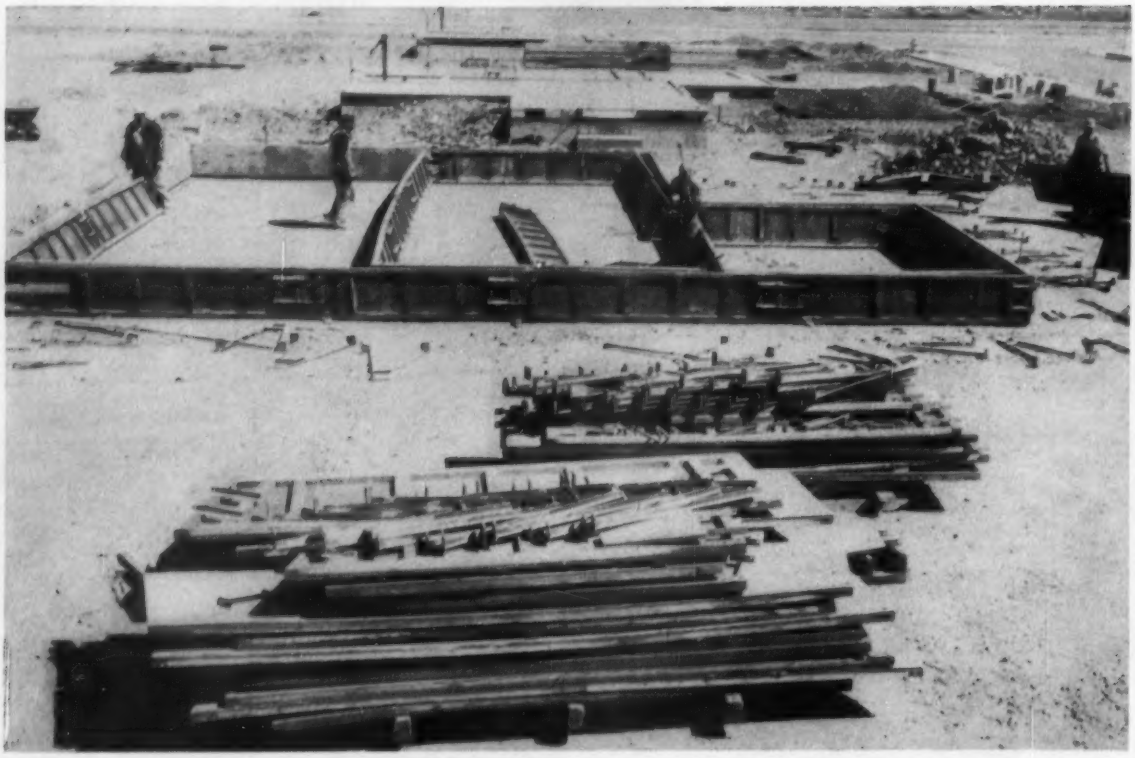
Thermoid research is responsible for new, better hose construction which makes Thermoid Hose more durable . . . easier to handle. Quarrying and construction work also demands the best in Conveyor Belting and Multi-V Belts. Ask your Thermoid Distributor for complete information on all these Thermoid Products. Or if you prefer, write direct.

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Thermoid

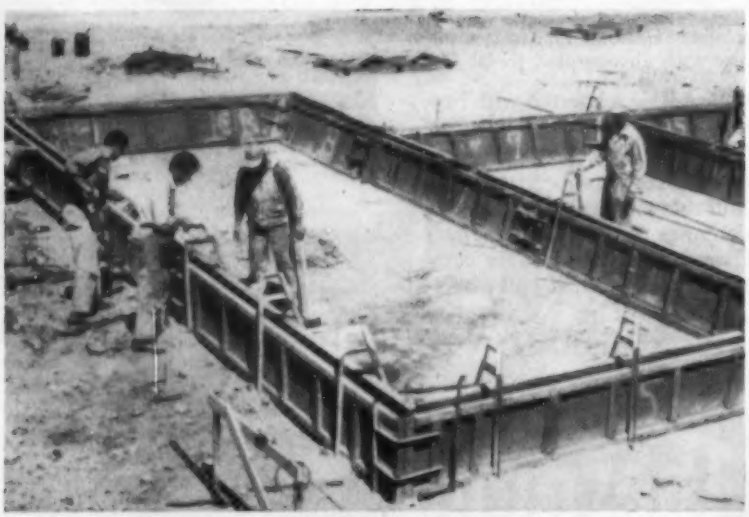
Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



CREW ERECTS FORMS for basementless house in 2 hr on compacted ground. Single panels are carried easily by one man and numbered sections permit unskilled help to do assembling. All form materials for one house are on two skids in foreground.

Interlocking Foundation Forms Save Hours On Substructures for West Coast Builder



A FEW MEN set them up in a hurry. Exterior walls are vertical on outside, sloping on inside faces. Interior foundations slope on both sides to present greater bearing surface.

STEEL A-FRAME, held by super Ken McCallum, braces forms, holds them down.

STEEL PINS through holes in connecting angle iron join panels. Note simple, sturdy bolted construction and Plyscore facing.

INSIDE CORNERS have similar matching angles that are pinned together to make a tight, rigid and accurate joint.

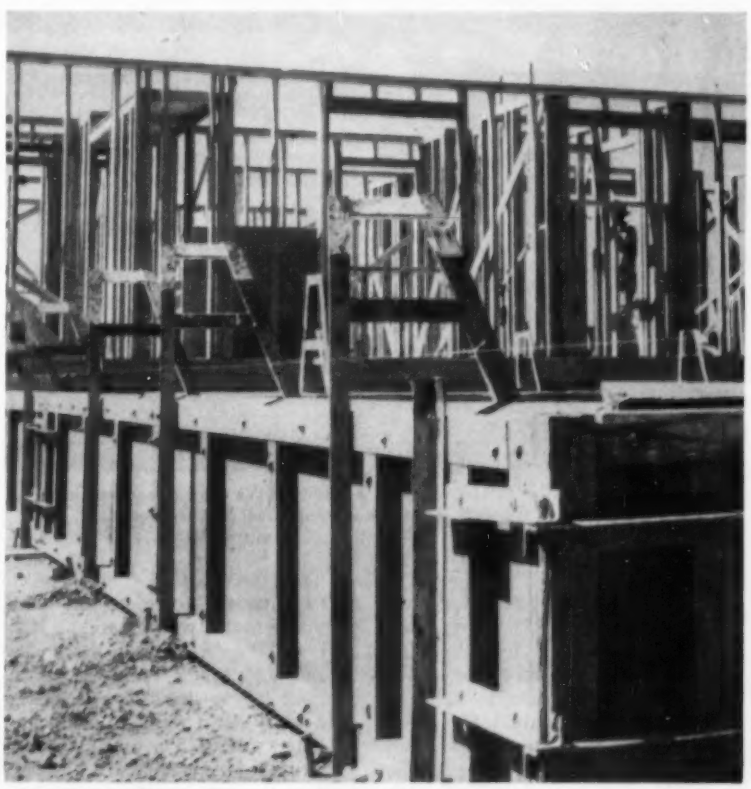
LARGE SAVINGS in foundation costs are being effected by a West Coast home builder through an ingenious system of interlocking forms. Richard H. Grant, developer of the Parkside tract of 1,200 homes in San Mateo, Calif., employs a method of pouring foundations, without excavating, which saves time and trouble.

Grant claims his forms to be up to 16 times faster than conventional form-building; the method permits re-use of forms and employs some unskilled labor. A crew of three carpenters and two laborers can set up forms for a house in 2 hr that might otherwise require 3 days. The same forms have been used up to 300 times.

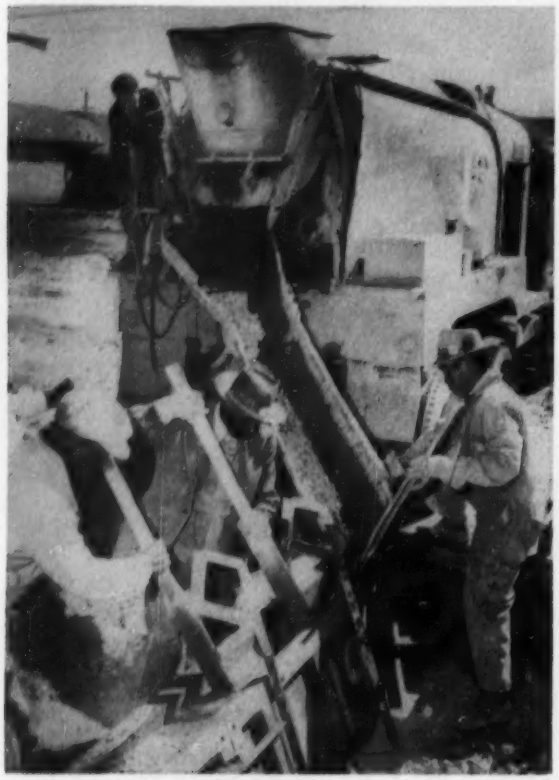
Cost is pro-rated to approximately $20 per house, as against the usual $300-400. Any of the sections needed for the 1,232-sq ft Parkside homes can be handled by one man, and all forms for one house stack on two skids for transfer by fork-lift truck.

Forms are made of ¾-in. exterior grade oil-treated Plyscore with 2x3 bracing bolted to panels. Steel flanges project from ends, which are joined by driving steel pins through holes in the flanges.

(Continued on next page)



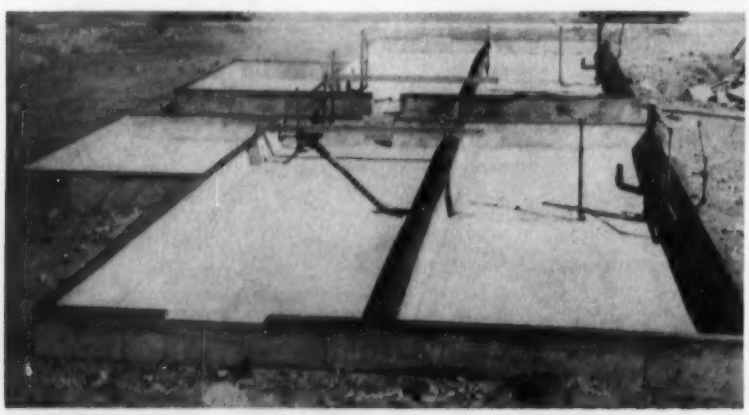
A-FRAMES have been spiked to ground, set to the line and nailed to the forms to hold them straight and steady during the pouring. Adjacent house framing appears in background.



CONCRETE WORKERS assist in placing as transit-mix operator dumps a load into 2-ft forms. Level ground aids operations.

HAND FINISHING precedes placing of bolts that will secure mudsills. Note uncluttered forms and integral foundation corner.

STRIPPING is done in minutes. One man carries light panel without effort. Sill bolts are in place, inside walls are sloped.



COMPLETED FOUNDATIONS with plumbing in place. A thin layer of concrete is poured over the ground between the walls for vermin-proofing under the new homes.

Grant's system works like this: forms are set up on 95% compacted ground and joined by the pins wherever sections meet—at sides and at inside and outside corners. To brace forms against rising or shifting, welded steel A-shaped frames are set up to straddle forms, to which they are fastened with double-headed nails.

Steel stakes, driven into the earth through holes in flat pads of heavy metal welded to the bottom of the A-frames, hold the frames and forms securely to the ground. These stakes are equipped with projecting flags so they can be lifted out with a pry bar.

Forms for exterior walls are vertical on the outer surface and sloping on the inner surface to give maximum load-bearing support. For interior walls, both sides of the foundation are sloped.

In practice, a crew goes down the line in the tract, setting up and leveling forms. When ready, transit-mixed concrete is poured into the 24-in. high forms. The top surface then is troweled smooth and bolts placed into the concrete to secure the redwood mudsills. When the concrete has set, forms are stripped off on to skids for removal to the next building site. A thin layer of concrete is poured directly on the ground between the walls for vermin-proofing of these basementless homes, as required by local code. Foundation walls retain the concrete in this layer.

Grant claims that his method of pouring monolithic foundations eliminates posts, piers and girders which he says bring on uneven stresses to the building and cause unequal settling and cracking. Further advantages claimed are rigid dimensional stability of foundations and nearly perfect uniformity.

For its inventor, this quick and efficient foundation method permits reducing costs to a point where his selling price gives him a competitive edge without lowering quality.

STAYS PUT!

Tests prove new Sinclair HEAVY DUTY BEARING GREASE gives better lubrication . . . longer life to bearings. It is specially compounded to *stay put* in heavily loaded, slow speed rotating or sliding bearings. You'll find it has an exceptionally high load-carrying capacity . . . greater resistance to melting out.

Try it—for longer bearing life . . . higher productivity . . . lower operating costs.

A Sinclair Lubrication Engineer can give you expert counsel on how you can get the most out of your equipment with Sinclair's new HEAVY DUTY BEARING GREASE. Phone your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

SINCLAIR

HEAVY DUTY BEARING GREASE

Like these contractors, you can

Bid lower- Finish jobs faster- make more per contract

SPECIFY GENERAL MOTORS DIESEL POWER

In all your construction equipment

"Works faster... burns less fuel... costs less to maintain."

That's what these contractors—operating *seven* different kinds of General Motors Diesel-powered equipment—report about their GM Diesels. They've got on-the-job proof that a GM 2-cycle Diesel does more work at less cost on every construction job.

If your business is building anything from sewers to skyscrapers, you'll find a good way to build your business is to *specify* a GM Diesel when you buy equipment.

For this quick-acting 2-cycle Diesel accelerates faster under load, burns fewer gallons of low-cost fuel, stands up better even in toughest working conditions. You won't need service often but, when you do, your GM Diesel distributor backs up engine performance with fast service and quick delivery of low-cost parts, no matter where your contracts take you.

Today you can get GM Diesel power in over 750 different models of equipment built by more than 150 different manufacturers. Get their names from your local GM Diesel distributor or write direct for the list.

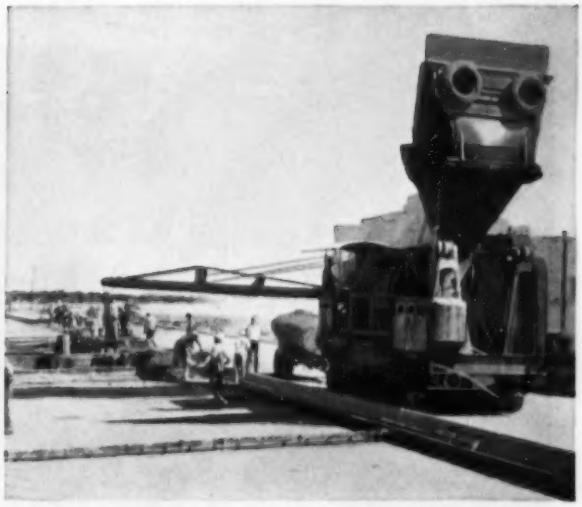
25% MORE WORK AT HALF THE FUEL COST

California contractors McGuire & Hester report they're getting 25% more work—and spending 50% less for fuel—since they converted this ¾-yard dragline from *gasoline to General Motors Diesel power.* The compact "4-71" GM Diesel did such a good job that the contractor repowered two more shovels with GM Diesel.

GM
GENERAL MOTORS
DIESEL POWER

WORKS ⅓ FASTER—CUT FUEL COSTS 60%

Maryland contractor Charles F. Knox, Jr., reports he gets ⅓ more production, has cut fuel costs 60%, since he converted this ¾-yard shovel from *gasoline to GM Diesel power*. The shovel works 8 to 10 hours a day, costs far less to maintain. You can specify GM Diesel power in over 50 shovel models built by more than 20 manufacturers.



PAVES 1400 FEET A DAY

This Koehring Paver, powered by a compact, quick-accelerating GM 2-cycle Diesel, lays 1400 feet of 25-foot wide pavement per day for the Austin Road Company of Dallas, Texas. You can lay pavement faster and at less cost with GM Diesel power—available as original equipment in 8 paver models made by 4 different manufacturers.

"FASTEST DITCHER IN THE AREA"

McGuire & Hester *specified* GM Diesel power in two new Buckeye Ditchers and a Lorain Crane, as well as repowering a Hough Payloader, after getting *more work at less cost* with GM Diesel power in their dragline. The master mechanic calls this GM Diesel-powered Buckeye Ditcher "fastest in the area."

NO REPAIRS IN TWO YEARS

These GM Diesel-powered LeTourneau-Westinghouse Tournapulls worked over two years in flying abrasive dust without losing a day for repairs, reports Arizona contractor Link L. Colvin. In every kind of earth-moving equipment GM Diesel power lasts longer, works faster, costs less to run and maintain.

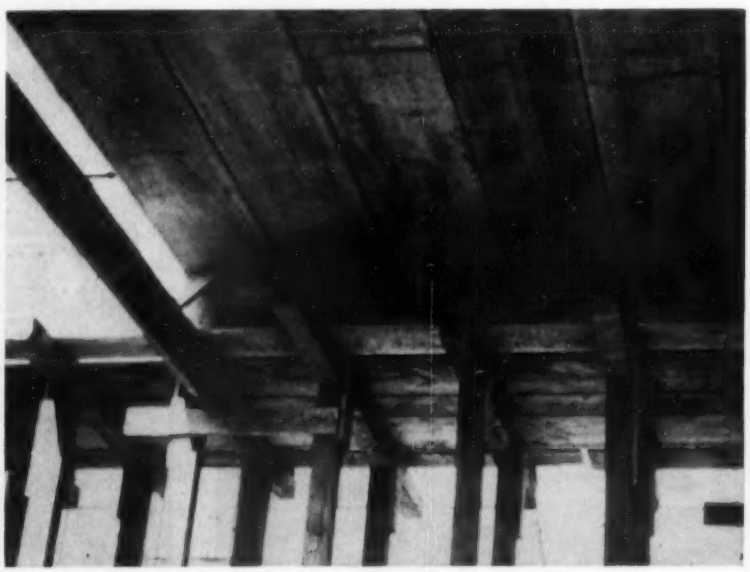
DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines . . . 30 to 300 H.P. • Multiple Units . . . Up to 893 H.P.

WORKMEN BRING IN another 8x16-in. slab for floor that will become an integral part of the reinforced concrete structure. Ends of hollow Flexicore units are laid on beam forms, and concrete flowing into core ties beams, floors and roof together.

Flexicore Slabs Placed on Forms Tie Into Frame



RIGID FLOOR is created immediately after slabs are placed and grouted; then can be used as a permanent work platform. Underside was left exposed, only calked and painted.

FLOORS AND ROOF of Flexicore slabs were placed on forms for concrete beams and columns before reinforcing steel was placed and the structural frame was poured—in the construction of an addition to a textile plant.

Use of the precast slabs eliminated form erection for floors and roof, and placement before pouring the beams and columns tied all the slabs to the beams in a monolithic structure when concrete was poured. In addition, the slabs established a permanent work deck for concrete crews, eliminated much scaffolding, and made it possible for masons to work on lower levels while forming and curing progressed on upper levels.

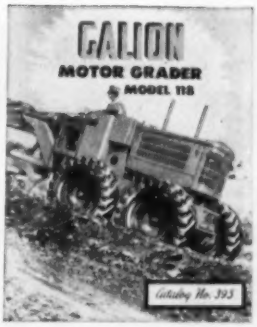
The building is a four-story, 50x140-ft addition to the Eagle Knitting Mills plant in Milwaukee. Contractor for the reinforced concrete structural frame building was Siesel Construction Co., Milwaukee, who finished 30 days ahead of a guaranteed occupancy time limit.

First, the contractor erected forms for concrete beams and columns to frame an entire floor at one time. Then, the Flexicore manufacturer's crew (Mid-States Concrete Products Co., Beloit, Wis.) hoisted slabs to position directly from the delivery truck. They placed floor slabs on beam forms and plugged cores 4 in. from each end to keep concrete from flowing far inside. Placement of the first two floors (about 7,000 sq ft) took 2 days each. From there on placement averaged 3 days per level.

Floor slabs were grouted immediately to form a single rigid floor unit. Underside joints were calked later. Using the slabs as a work deck, the contractor inserted reinforcing steel and poured beams and columns for the floor immediately below the slabs. Beams and col-

INTERESTING LITERATURE on Construction Equipment

Free copies of these motor grader and roller catalogs are available to anyone having an interest in such equipment.



Model 118 tandem drive motor grader, 115 or 125 h.p. diesel engine.

Model 104 tandem drive motor grader, 93 h.p. diesel engine. Gasoline engine available.

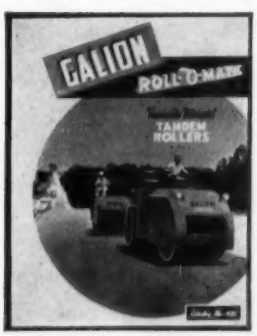
Model 450 tandem drive motor grader, 75 h. p. diesel engine. Gasoline engine available.

Model 303 tandem drive motor grader, 55 h. p. diesel engine. Gasoline engine available.

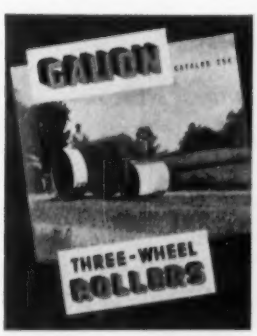
Model 503 tandem drive motor grader, 50 h.p. gasoline engine. Diesel engine available.

A trench roller especially designed for compacting materials on road widening jobs.

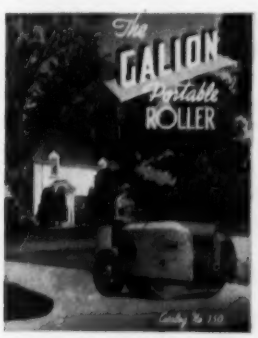
A 4-6 ton tandem roller with hydraulically retractable towing wheels for easy portability from job to job.



Tandem rollers with ROLL-O-MATIC torque converter drive. Four variable weight sizes. Gasoline engine. Gear shift models (without torque converter) available.



3-Wheel rollers. Five sizes with cast or variable weight steel rolls. Diesel or gasoline engine.



Portable roller. Variable weight. 7100-9765 lbs. Gasoline engine.

Small tandem roller, 3-5 ton variable weight. Gasoline engine.

ESTABLISHED GALION 1907

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THE GALION IRON WORKS & MFG. COMPANY, Dept. CM-25, Galion, Ohio

I am interested in Galion equipment. Please send me literature checked below.

- ☐ 118 Motor Grader
- ☐ 104 Motor Grader
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- ☐ Trench Roller
- ☐ 4-6 Ton Retractable Wheel Tandem Roller
- ☐ ROLL-O-MATIC Tandem Rollers
- ☐ Three-Wheel Rollers
- ☐ Portable Roller
- ☐ 3-5 Ton Tandem Roller

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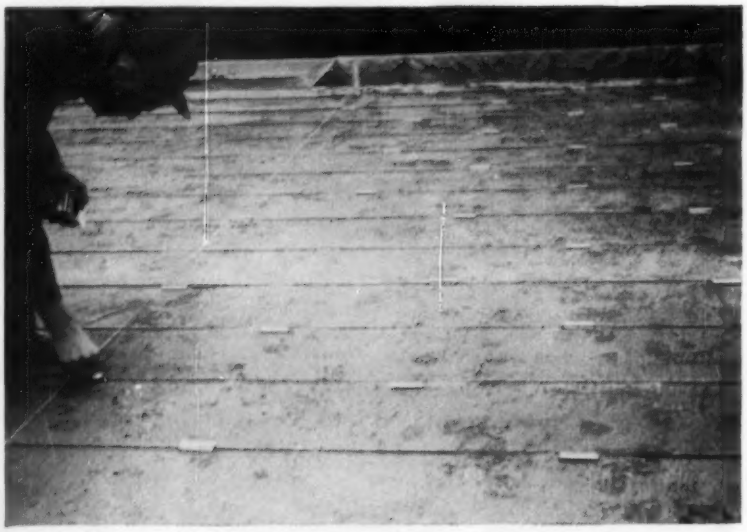
FIRM _____

ADDRESS _____

CITY _____ STATE _____



METAL CLIPS, staggered on 32-in. centers in the grout joints between the slabs, become anchors for 2x2-in. sleepers which will carry maple flooring for the factory floors.

umns were cured by enclosing an entire story with tarpaulins and heating with salamanders.

Crews stripped the sides from forms and repeated the cycle on the floor above just as soon as beams and columns attained sufficient strength to permit stripping. Bottoms of forms and jacks were left in place until curing was completed. Masonry crews moved in immediately to build curtain walls between the bays and close up the building.

Following this pattern, while the roof slabs were being placed on the fourth story formwork, the third story's structural frame was curing, and masons were closing up the second story. With the slab placement taking 3 days or less per level, workmen were able to complete each story in 3 weeks, working right through Milwaukee cold weather.

Structural Ties

The Flexicore slab floors and roof became an integral part of the structural frame. Although usually inserted on other projects, no reinforcing steel was used between the ends of Flexicore slabs and across center beams on this job. Use of tie rods would have complicated the installation of beam reinforcing steel, since this steel was placed after the slab installation. Because the slab cores had been blocked 4 in. in from the slab end, pouring of the beam in the conventional manner provided a 4-in. concrete core which is monolithic with a beam concrete. Top of the beam is flush with tops of the precast slabs.

All four floors and the roof (planned for a future addition) were designed for 100 lb, psf. Flexicore units 8x16 in. held floor depth to 8 in. Slabs are hollow-cast to increase load capacity by reducing dead load. Prestressed reinforcement was placed in slabs during manufacture, according to the loading specified.

Finish Flooring

The owner wanted maple flooring on the concrete slabs. To provide for simple anchoring to Flexicore, workmen placed more than 12,000 metal clips, staggered on 32-in. centers in the grout joints between slabs. One man followed the grouters and marked 32-in. centers as soon as grout was brushed into the joints.

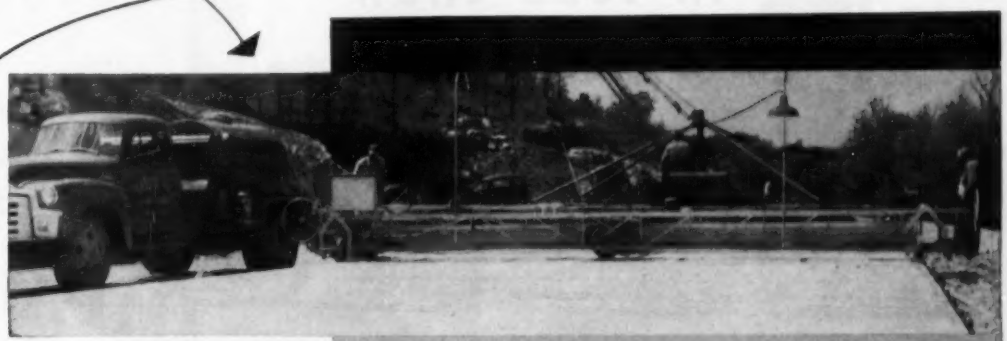
Then a line was set at the markers and the furring clips inserted between every second slab (32 in. apart). Alternate clips faced each other to eliminate slippage of 2x2-in. sleepers nailed to the clips. The staggered pattern assured anchorage for finish flooring no more than 32 in. apart in any direction.

Slabs were left exposed, calked and painted on the ceiling side. Because knitting mills frequently change methods of manufacturing, conduits and plumbing were attached to the underside of slabs and left exposed.

Roof construction was 2 in. of rigid insulation and built-up roofing over the hollow slabs.

WORLD'S LARGEST CONCRETE ROAD CUTTING JOB PROVES SUPERIORITY OF *CARDINAL BLADES!*

1,000,000 feet of West Virginia turnpike cut in record time—at lowest cost in history!



In cooperative effort with William F. Middlestadt of Seals, Inc., of Baltimore, who furnished equipment and personnel, CARDINAL NON-BRAK BLADES cut a 68 mile x 1½ inch longitudinal joint in this new two lane highway, and a 24 foot transverse joint every 18 feet . . . total—1,000,000 lineal feet through limestone aggregate. Job completed with CARDINAL NON-BRAK BLADES in record time at a record low cost.

Cardinal
NON-BRAK BLADES
Lowest initial cost on the market—reinforced with steel and fiberglas for better cut and longer life.

Cardinal
DIAMOND BLADES
33⅓% more cutability than conventional blades—25% lower initial cost.

When you work with CARDINAL, you work with blade men who know the concrete cutting business . . . men who will frankly tell you when a rugged, low-cost CARDINAL NON-BRAK BLADE will do the job on green concrete, at less cost than a diamond blade . . . or, when a CARDINAL DIAMOND BLADE will give you the best deal, cost-wise, on aged concrete or other hard specifications. More footage per day . . . less cost per cut—that's the kind of guarantee that makes good sense. Call, write or wire, today!

Cardinal
ENGINEERING CORPORATION
World's Largest Exclusive Manufacturer of Concrete Cutting and Masonry Blades
144 BURNSIDE STREET, PHILADELPHIA 27, PA., U. S. A
Branches or Distributors in Most Principal Cities

From feed to finish in less than 3 seconds

Patent Pending

CONTROLLED IMPACT ACTION

UNIVERSAL IMPACT MASTER GIVES YOU TOP CAPACITY PLUS UNIFORM GRADATION CUBICAL AGGREGATE IN ONE FAST OPERATION

Controlled Feeding

Shovel loaded run-of-quarry rock is directed into the path of the rotor hammers to receive the smashing impact of a direct blow.

Controlled Breaking

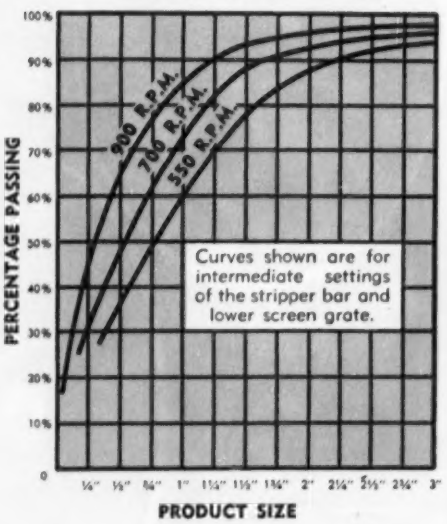
All of the breaking is accomplished by the impact of rotor hammers upon the rock resulting in a cubical product of highest quality. Both rotors rotate in the same direction *with the flow of material* promoting fast feeding and fast discharge for top capacity. Incoming rock is struck a solid blow by the first rotor and finish size is instantly discharged. Oversize particles are struck by the second rotor and finish size is again quickly discharged.

Control over Finished Product

Three simple mechanical adjustments provide complete control over finished product. Size is governed by rotor speed. Various positions of stripper bar and lower screen grate give a wide degree of control over gradation. In closed circuit setups recirculating loads can be kept to a minimum.

● *Ask for Literature.* Get the complete story on the UNIVERSAL IMPACT MASTER. Learn how its high speed production of highest quality uniform gradation cubical aggregate can earn greater profits for you. Models available for both portable and stationary setups with capacities to 750 tons per hour. Full details in Bulletin No. U534.

PERFORMANCE MODEL 3240



PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION
327 8th St. N.W., Cedar Rapids, Iowa
A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St., Chicago 51, Illinois

The Biggest Earthmoving News in Years!

The INTERNATIONAL DROTT 4-in-1

Turn the page for the complete story on this newcomer to the long line of INTERNATIONAL earthmoving products.

PRESENTING THE

New INTERNATIONAL DROTT 4-in-1 Skid Shovel

- **New Versatility**
- **New Ease of Operation**
- **New Hydraulic Shovel Selector instantly converts the 4-in-1 into a Bullclam, Clamshell, Skid-Shovel, or Bulldozer**

Here's the unit that answers every requirement of contractors and smaller communities for one piece of machinery capable of handling a multiplicity of earthmoving jobs.

It's the NEW 4-in-1 multi-purpose addition to the famed INTERNATIONAL DROTT Skid-Shovel line, and it's available on INTERNATIONAL TD-6 and TD-9 crawlers.

The 4-in-1 can be immediately changed into a Bullclam, a Skid-Shovel, a Clamshell, or Bulldozer by merely shifting the "shovel-selector" lever into the desired position. The lever is located within easy reach of the operator and shovel selection can be made either when the tractor is in motion or standing still.

Like all products in the INTERNATIONAL DROTT line, the new 4-in-1 Skid-Shovel takes wear and strain from the tractor by transporting heaped loads at ground level on the exclusive Skid-Shoes. And these same Skid-Shoes permit use of the lever principle to supply 300% greater breakout force than on competing front-end loaders. There is the Hydro-Spring feature, too, found only on INTERNATIONAL DROTT equipment that absorbs 70% of shock normally encountered in front-end loaders.

For excavating or loading, the standard INTERNATIONAL DROTT Skid-Shovel is tops. But if you're looking for one machine to handle many different types of jobs, the 4-in-1 is it.

2 **CLAMSHELL**—Opening the clam lip wide makes it possible to operate it as a clamshell for loading from stockpiles or picking up loose material in close quarters. Clam is closed by hydraulic pressure.

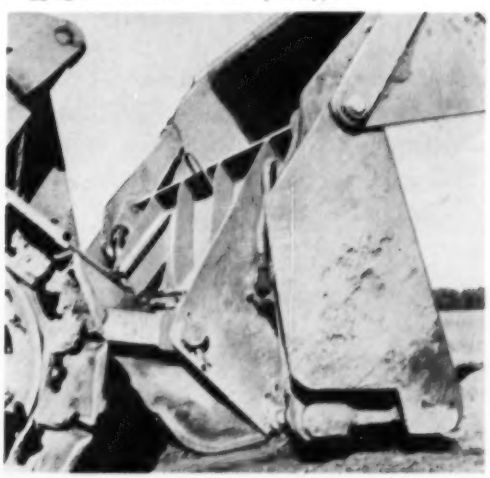
3 **BULLDOZER**—The clam is wide open and the rear of the bucket becomes the dozer. Depth of cut is regulated by forward and backward pitch of blade over loader shoes, rather than by lifting and lowering of push beams.

FOR MORE ON THIS REVOLUTIONARY NEW ALL-PURPOSE DIGGING AND LOADING TOOL, SEE NEXT PAGE

1 **SKID-SHOVEL**—With the clam fully closed, straight-forward loading of shovel is accomplished by rolling the entire bucket forward to excavate until filled, then rolling it back when heaped to retain the load.

4 **BULLCLAM**—When loading, the clam acts as a depth gauge. The degree of clam opening regulates the depth of cut. As the unit moves ahead, material boils into the bucket with a scraper-like action to a heaped load.

SKID-SHOES permit ground level transportation of heaped loads at high speeds. They also serve as the fulcrum of the lever principle which multiples the digging and break-out force by 300%.



AS A BOTTOM DUMP, the 4-in-1 has a dumping clearance 3 feet more than the closest competitor and permits the 4-in-1 to load material over the highest sideboards of the biggest trucks.

A New High in Front End Loaders

Dumping Height of INTERNATIONAL DROTT 4-in-1 Tops Competitors by Over 3 Feet

For loading out the biggest trucks, both off-highway and over-the-road haulers, nothing can match the "reach" and the maneuverability of the INTERNATIONAL DROTT 4-in-1.

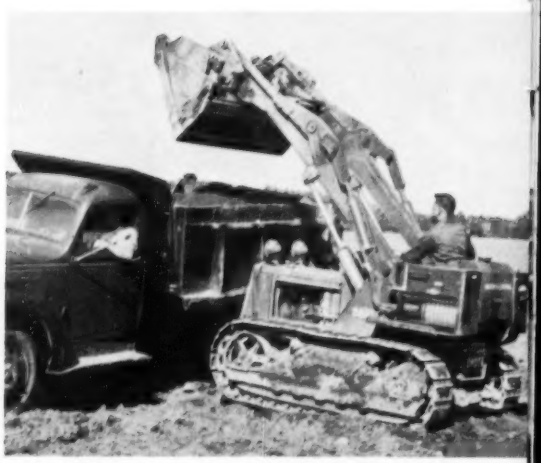
Although the standard Skid-Shovel with regular bucket has a dumping clearance higher than any other loader in the same capacity range, *with the bottom dump feature of the 4-in-1* an additional two feet of height is obtained. Positive ejection of sticky material is assured.

For a demonstration of the outstanding multiple utility of the 4-in-1 call your INTERNATIONAL Industrial Power Distributor today. See this "one machine fleet" in action. See how most of your earthmoving or loading problems can be solved fast, efficiently and economically by this newcomer to the INTERNATIONAL DROTT line.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.
DROTT MANUFACTURING CORP., MILWAUKEE 8, WIS.

INTERNATIONAL®
DROTT

INTERNATIONAL HARVESTER



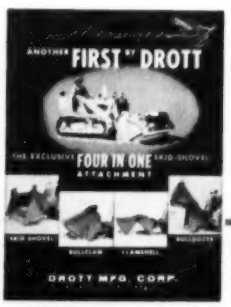
AS A FORWARD DUMP, the bucket of the 4-in-1 can also be discharged in the regular forward dump manner, which still affords a higher clearance than other loaders in the same capacity range.

FOR SOD STRIPPING AND STOCKPILING, important to landscaping contractors, golf course architects and superintendents, park and recreation officials, the 4-in-1 is placed in bullclam position to cut 2 inches deep. As tractor moves forward a blanket of sod rolls up into the bucket.

FREE

The New 4-in-1 Catalog

For your free copy of the 4-in-1 Skid-Shovel catalog fill out the coupon and mail it today.



Drott Manufacturing Corp.
3841 W. Wisconsin Avenue
Milwaukee 8, Wisconsin

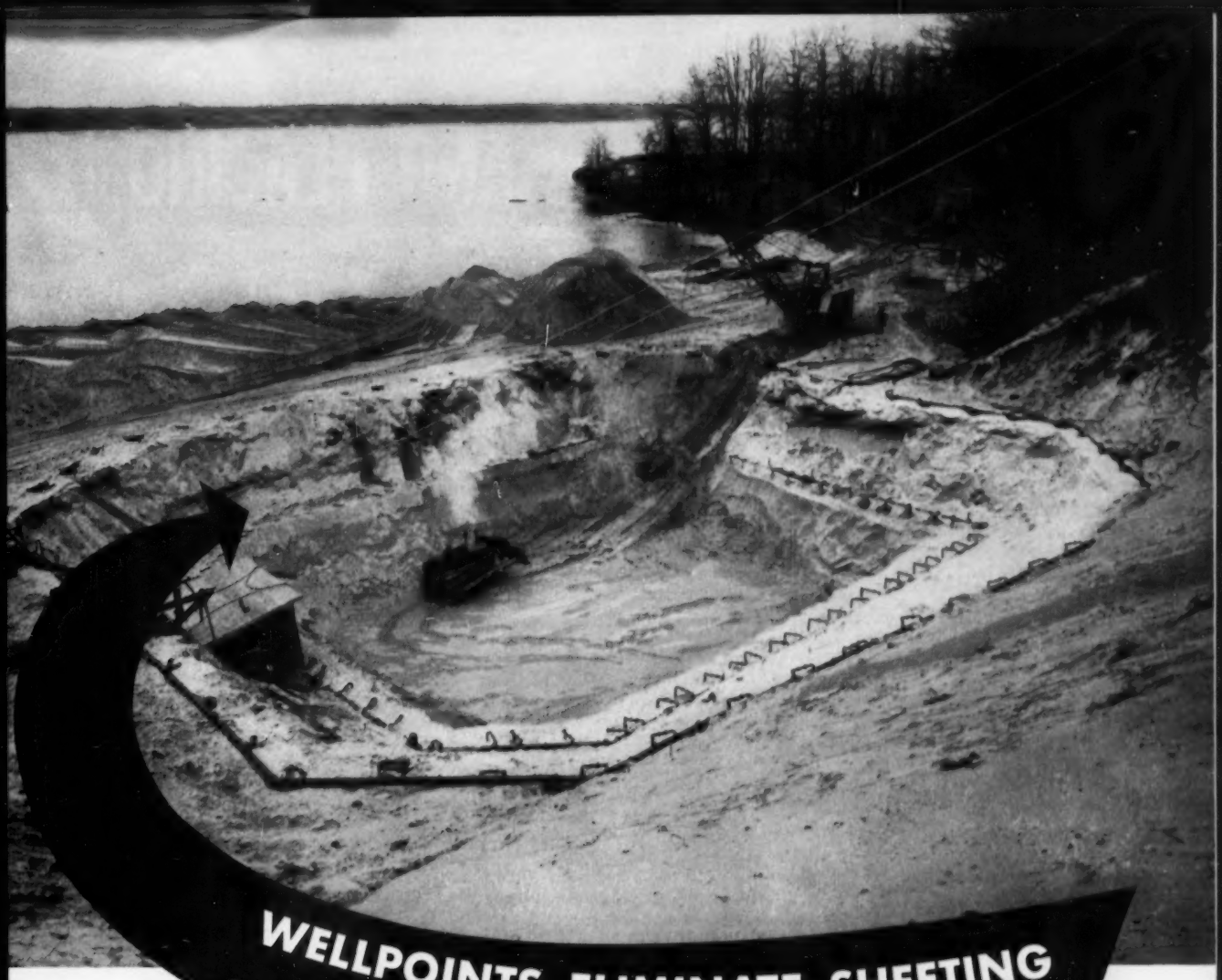
Gentlemen:

Please send a copy of the 4-in-1 Skid-Shovel Catalog to

NAME _____

ADDRESS _____

CITY _____ ZONE ____ STATE ____



WELLPOINTS ELIMINATE SHEETING ON LAKE-SIDE FOUNDATION

A two-stage Moretrench Wellpoint System controls 24′ of water on this deep foundation for a pump station in Montague, Michigan. Material is fine sand with clay layers. No sheeting or bracing is needed. Contractor excavates with freedom and speed . . . in the dry!

It's possible to save money, time and trouble on a wet job. Ask our nearest office to show you how.

Catalogue on request

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CONCRETE MIXING AND PLACING

11a. Design and Control of Concrete Mixes

By G. B. SOUTHWORTH
Assistant General Sales Manager
The Master Builders Co.

SELDOM, IF EVER, do the specifications on large jobs provide for only one class, or strength, of concrete. Footings may call for 2,500-lb. concrete, load-bearing walls may require 3,000- or 3,500-lb. concrete, and industrial floors may be specified as 3,500- 4000-lb. or even higher, particularly in the case of suspended slabs.

Specifications in the factory building for which we have already designed or proportioned a 4,000-lb. non-air-entrained concrete, also call for a small amount of 2,000-lb. concrete, some 2,500-lb. footer concrete, 3,000-lb. concrete in the walls and 3,500-lb. concrete the columns. In addition, an outside loading dock, subject to weathering, requires 4,000-lb. air-entrained concrete.

Our aggregate analysis and proportioning of the 4,000-lb. mix has established certain factors which will be constant in any non-air-entrained mixes produced with those materials. The volume and quantity of coarse aggregate will remain constant in both air-entrained and non-air-entrained mixes. The fundamental principle of the new ACI method is that, with a given set of materials, the concrete will contain two constants —coarse aggregate and mortar. The function of the mortar is to assist us in the uniform distribution of the coarse aggregate throughout our forms or mass, and to glue the pieces of aggregate in a fixed position.

• **In the design of our** 4,000-lb. concrete, we found that the lubricating values of our sand and the character of our coarse aggregate was such that 11.50 cu ft of the coarse material could be used in a cubic yard of concrete. In other words, 15.50 cu ft of mortar composed of cement, water, sand and entrapped air are needed to distribute and cement in place the coarse aggregate. Although the composition of the mortar may be varied for different slumps, strengths, or for the use of entrained air, that volume of mortar will still do the very necessary job of placing and holding the aggregate.

Furthermore, so long as the desired slump remains the same, the water requirements for a cubic yard of concrete in any reasonable range of cement factors (3 sacks to 7 sacks per cu yd) will be relatively constant. This means that the only variables in our concrete, at a given slump, will be our cement and sand, and they will vary on a volume for volume basis. As the cement factor decreases, the sand content will be increased. The lesser demand for water resulting from a lower quantity of cement will be offset by the increased demand of the higher quantity of sand.

In adjusting the proportions of the mix to provide for other strengths at a constant slump, it is necessary to determine the weight ratio of cement to sand at equal volumes. We have found that a sack of cement (94 lb) has an absolute volume of .478 cu ft. An equal absolute volume of our sand (specific gravity 2.65) would weigh 79 lb (.478x2.65x62.4). Therefore, each change in our mix of one sack of cement should be accompanied by an adjustment of 79 lb in our sand.

• **The next step** in arriving at a series of mix proportions for our job is to establish the cement factors required for the various strengths specified. Assuming that our cement will meet average Type I performance, we do this by reference to the Water Cement Ratio Table 3 (p. 102, January, '55). Our total water requirements are divided by the water-cement ratio to find the cement factor. For example:

28 Day PSI	*Total Water*	*W/C Ratio*	*Cement Factor*
2,000 lb	36 gal	9 gal	4 sacks
2,500 "	36 "	8 "	4.5 "
3,000 "	36 "	7.25 "	5 "
3,500 "	36 "	6.5 "	5.5 "
4,000 "	36 "	6 "	6 "

As stated below, our coarse aggregate and water will remain constant, and the change in cement factor will be compensated for by an adjustment in sand at the rate of 79 lb for each sack of cement. Our 4,000-lb mix, which will be used as the base for these adjustments, consists of:

564 lb	(6 sacks)	cement
1,247 "		saturated surface dry sand
2,013 "		saturated surface dry limestone
300 "	(36 gal)	total water

Our saturated surface dry weights for the strength series of mixes, all at a 4-in. slump, will be:

	COMPRESSIVE STRENGTH, 28 DAYS, PSI		
	2,000	2,500	3,000
Cement	376	423	470
Sand	1,405	1,366	1,326
Stone	2,013	2,013	2,013
Water	300	300	300

	3,500	4,000
Cement	517	564
Sand	1,287	1,247
Stone	2,013	2,013
Water	300	300

The 2,000-lb mix has 2 sacks less cement than our 4,000-lb base mix. It will require 2x79 lb or 158 lb more sand to maintain volume and consistency, and so on. Obviously, these weights would be corrected

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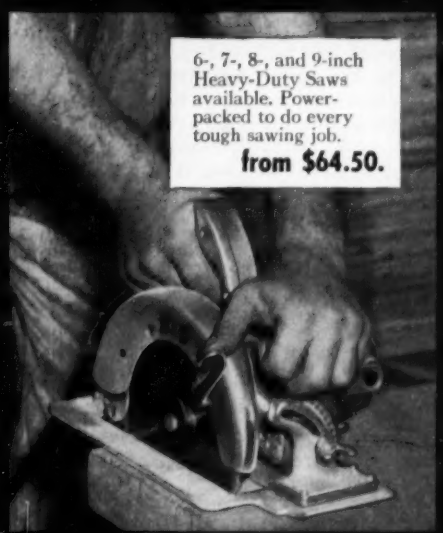

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VIBER VIBRATOR selected for concrete compaction in crucial area to produce maximum density at the point where concrete stress is critical.

Vibration essential in crucial area around prestressing cones

THE RICHFIELD OIL BUILDING ANNEX in Los Angeles is the largest monolithic prestressed concrete office building in the United States today. According to Albert C. Martin and Associates, architects and engineers on this project, prestressed construction was adopted because of design problems resulting from the matching of 10 foot 3 inch floor to floor heights in the existing building. With 8 feet the minimum clearance height, prestressing not only made possible the matching of the high velocity air conditioning ducts, and at the same time installation of recessed lighting, but allowed a 46 foot clear span for flexibility in partitioning of office space. Because of the lack of room for erection equipment the new structure was cast in place.

• **Concentration of load** on the cable anchorage by stressed cables makes the area around the cones the most crucial area. Because patching of concrete in this area of cast-in-place prestressed concrete could scarcely be tolerated, consolidation of the concrete in this area is particularly important.

• **Guy F. Atkinson Company,** contractor, used Viber 1-5/16 and 1-3/4 inch diameter vibrators. Model E electric motor driven vibrator 1-3/4 inch diameter was used at the base of cone, or where spacing would allow, the 1-5/16 inch diameter Model 26 was used between cones as well as at the base of cone.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 75, 726 South Flower Street, Burbank, California.

THE CONGESTION of prestressing cables and cones at the point of maximum load requires top performance from vibration equipment.

VIBER

CONCRETE VIBRATORS SINCE 1931

CONCRETE . . . Continued

for moisture content of the aggregates before giving them to the batch man.

• **When conditions require** a slump other than 4 in., a major overhaul of the proportions of the mortar is advisable. Although some adjustment factors can be developed, their use is usually more complicated than simply re-proportioning the materials comprising the mortar. Higher slumps require more water which, in turn, requires a higher cement factor. The increased volume of water and cement is adjusted for by an equal decrease in the volume of the sand.

Perhaps the placement conditions of our wall and column concrete are such that the engineer has allowed the use of 6-in. slump concrete for those purposes. Table 4 p. (103, January, 1955) indicates that 38 gal of water will be needed to produce a 6-in. slump with our 1½-in. crushed limestone aggregate, or an increase of 2 gal over that required for 4-in. slump. For the 3,500-lb column concrete, using a water cement ratio of 6.5 gal per sack, we find that our cement factor will be increased to 5.8 sacks to compensate for the additional 2-in. in slump. The cement will have an absolute volume of 2.77 cu ft (5.8x.478), and the water will contribute 5.07 cu ft (38 divided by 7.5) to the yield of the mix. We can still expect 1% entrapped air (.27 cu ft).

Even though we have changed the consistency of the concrete, the coarse aggregate volume of 11.50 cu ft and weight of 2,013 lb remains unchanged. The mortar volume of 15.50 cu ft will be composed of 8.11 cu ft of cement, air and water and 7.39 cu ft of sand. Since the sand has a solid weight of 165 lb per cu ft, the saturated surface dry weight required will be 1,219 lb.

Our 3,500-lb column concrete, at a 6-in. slump, will be:

545	lb	(5.8 sacks) cement
1,219	"	saturated surface dry sand
2,013	"	saturated surface dry limestone
317	"	(38 gal) total water

An entire series of strength mixes, at 6-in. slump, can now be established, if desired, in the same manner as the previous series at

(Continued on page 107)

When figuring earthmoving costs...

THE No. 12 GOES ON THE CREDIT SIDE

The Caterpillar No. 12 Motor Grader is a big, versatile machine that always is entered on the credit side of ledger books. Particularly when you figure earthmoving costs.

Knutson-Gould Construction Co. of Kansas City, Mo., knew that when it began hauling fill for the approach to the Missouri Bridge at Jefferson City. Here, you see its CAT* No. 12 Motor Grader as the cost-cutting member of a team of equipment moving 260,000 yards of loess and clay.

The No. 12 is maintaining the haul road. By so doing, it is wringing the last cent of economy out of the big tractor-scraper teams. They can haul their maximum capacity at the highest possible speed. The D7 and D8 pusher Tractors are not called away from the borrow pit to help rescue mired-down equipment.

And down time costs are slashed because the road is an *aid* to the tractor-scrapers, not a torture trail that causes breakdowns.

Your Caterpillar Dealer will be glad to show you the No. 12, No. 112 and the No. 212 Motor Graders at work on your job. Have him demonstrate the reasons successful contractors always put Cat Motor Graders on the credit side when they figure earthmoving costs.

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For additional details write to: *General Electric Co., Section X9825, Communications Equipment, Electronics Park, Syracuse, N.Y.*

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CONCRETE . . . Continued from page 104

a 4-in. slump. The cement factors will be 4.2 sacks for 2,000 lb, 4.75 sacks for 2,500 lb, 5.25 sacks for 3,000 lb and 6.3 sacks for 4,000 lb compressive strength. And, adjusting our sand from the above mix at the rate of 79 lb for each sack of cement, our 61-in. slump series will be:

	Compressive strength, 28 days, psi				
	2,000	2,500	3,000	3,500	4,000
Cement	395	447	494	545	592
Sand	1,345	1,302	1,262	1,219	1,180
Stone	2,013	2,013	2,013	2,013	2,013
Water	317	317	317	317	317

Again, these saturated surface dry weights would be adjusted for surface moisture of the aggregates before using in the field.

An adjusted series for 2-in. slump concrete which requires approximately 3 gal less water than our original 4-in. slump series would be made in much the same way. The lower water requirements of the 2-in. slump mixes would permit a lower cement factor. The reduction in volume of water and cement would be replaced by an increase in volume of sand.

• **There would be** a definite similarity in all of the above mixes, despite differences in strength or workability, as measured by slump. Also, some of the qualities that are related to the water-cement ratio — particularly compressive and flexural strength—will be essentially the same for a given strength, regardless of whether the slump be 2, 4 or 6 in. However, many of the important qualities of concrete, other than strength, are affected to a greater extent by the total water content of the mix than they are by minor changes in water-cement ratios. In an earlier method of proportioning concrete, The American Concrete Institute said, "For a given set of materials and water-cement ratio, the unit water content (Water required per cu yd of concrete) is the most important basic factor affecting the quality of concrete."

Obviously, the series of mixes for 2-in. slump concrete would have many qualities superior to those of the 6-in. mixes which contain 5 gal more water per cu yd of concrete, and the 4-in. slump mixes which have 3 gal more water per cu yd of concrete. These qualities would be adversely affected, if not lost completely, however, should an attempt be made to place the 2-in. slump mixes where conditions required the use of more workable concrete.

Unfortunately, the most carefully proportioned mixes sometimes seem to go 'haywire' on the job. For several days or weeks, concete placing progresses satisfactorily, and then, overnight, complaints of harshness pour down on the head of the concrete engineer or technician. When this happens, the chances are 999 to 1 that there has been a change in the gradation of the sand or coarse aggregate, or both.

• **The good concrete engineer** or technician, by routine tests on the aggregates, discovers these changes as soon as they occur and adjusts for them before the concrete is affected. However, the average contractor may not have a concrete expert on his payroll, or, at best, is prepared to make only the barest minimum of tests on his aggregates. It is fairly simple to make such tests if a change in the appearance of the concrete has taken place, and anyone with a working knowledge of the factors on which the design was based can interpret the variation in the aggregate grading into an adjustment of the mix proportions.

Experience with aggregates will usually indicate the limit of variations in grading. The fineness modulus of the sand will generally not fluctuate more than .1 in either direction. In anticipation of changes in either sand or coarse aggregate grading, it is wise to establish a system for mix adjustments. A very useful table can be prepared, using Table 5 (p. 103, January 1955) as the base.

The F.M. of our sand, as used in the original proportioning, was 2.92 which we considered as 2.90. We should expect this to vary between 2.80 and 3.00. From Table 5, the volume of dry-rodded coarse aggregate per unit volume of concrete, with 1½-in. aggregate, for this range would be:

F.M.	2.80	2.90	3.00
Volume	.72	.71	.70

This can be converted into some-

(Continued on page 110)

The Wonder Grease for Concrete Forms

REGARDLESS of whether you use steel or wooden forms for concrete work — you can apply Globe Form Grease by spray, brush, or swab. This time-tested paste emulsion will reduce peeling and pitting to a minimum when forms are removed, and practically eliminate patching.

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Le Roi 600 cfm compressor and Cleveland T-286 drill rig speed drilling operation

Motorists aren't the only ones who travel fast on the N. Y. Thruway. Contractors had to make plenty of time, too.

That's why this contractor made a mobile drilling unit out of his D-8 Cat. He used as components a Le Roi 600 CTM compressor and the Cleveland T-286 drill rig.

The compressor is designed especially for use with D-8 or TD-24 tractors. It is the only unit that attaches directly to the PTO and has a clutch as well. Capacity of the unit is 600 cfm.

The T-286 drill rig consists of two Cleveland patented air feeds, and Cleveland 4" drifters with air-motor booms. Here, it is mounted on the front of the tractor and has a spread of 220 degrees suitable for any variable drill pattern. Ten-foot steel changes, faster set-ups, better hole spacing, greater footage, better fragmentation—mean faster drilling and lower costs.

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CONCRETE . . . Continued from page 107

thing more substantial by multiplying each of these by 27, or

F.M.	2.80	2.90	3.00
	19.44	19.17	18.9

These figures can be interpreted as "Pounds of coarse aggregate per cu yd of concrete per lb of dry rodded weight," or as "Cubic feet of dry rodded coarse aggregate per cubic yard of concrete." It will be quickly noted that, regardless of the caption, the use of the figure is exactly the same. Our proportioning of the first mix was based on a dry rodded weight of 105 lb per cu ft. With a sand F.M. of 2.90, our coarse aggregate weight is 2,013 lb per cu yd (19.17x105).

Suppose complaints of harshness prompt us to re-check our aggregates which reveals that our dry rodded weight has dropped to 102 lb per cu ft, an indication that the aggregate grading has fallen off. Because of this change, our quantity of coarse aggregate should be only 1,955 lb per cu yd, or 58 lb less than our design. This would certainly result in the 'harshness' complaint.

• **Where the specific gravity** of the fine and coarse aggregate are about equal, a pound-for-pound adjustment can be made in the sand and stone. Our design would be changed to provide 58 lb less coarse aggregate and 58 lb more sand per cu yd of concrete. This change would apply "across the board" to all of the mixes we have already established.

If the specific gravities vary, as they do in the case of our materials, 2.65 on the sand and 2.80 on the limestone, we must establish a weight ratio on equal volumes. It is easy to see, for example, that 26.5 lb of sand will be equal in volume to 28 lb of stone. Going back to our elementary school mathematics we have the formula.

$$26.5 : 28 :: \times : 58, \text{ or}$$

X equals 55 lb, the amount of sand which will have the same absolute volume as 58 lb of our limestone. To go back to our 4,000-lb design for 4-in. slump concrete, this change in aggregate grading would result in a revision of the mix to:

564	lb	(6 sacks) Cement
1,302	"	S.S.D. Sand
1,955	"	S.S.D. Stone
300	"	(36 gal.) Total Water

Minor adjustments of this nature are not apt to upset our water requirements. If they do, the entire mortar composition will require revision in the same manner as the revision made for increased slump.

Our re-check of the aggregates might, on the other hand, show that our dry-rodded weight of 105 lb remains unaltered, but that our sand has changed to an F.M. of 3.00. At the 2.90 level, we used 19.7 cu ft of dry rodded coarse aggregate, whereas we can now use only 18.9 cu ft or 1,985 lb (18.9x105). This is 28 lb less than our original mix. While the complaints will be somewhat less pronounced, an adjustment is indicated and should be made in the manner described above, reducing the coarse aggregate by 28 lb, and increasing the sand by 27 lb.

• **The most important thing** to remember about revisions of this type is that, in addition to making the design changes, the attention of the aggregate producer should be called to the change in gradation so that he can locate and correct the cause. By and large, these changes and revisions apply only to variations in the direction of

(Continued on page 112)

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Good neighbors, too!

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Peak of blast shows extreme control. Confinement excellent. Breakage good.

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PART of the New York State Thruway runs only 25 feet from the houses of Suffern—50 to 75 feet above them! That's why L. G. De Felice & Son, contractors, had to have extreme control and confinement in blasting out this section of roadbed.

These machine-gun camera photographs prove what extreme confinement of explosive gases, what tight control of vibration and throw were obtained by "shooting it ROCKMASTER." You could hardly hear a rumble. Not a pebble in the air. Most residents never knew a blast had been set off!

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CONCRETE . . . Continued

poorer gradings, except on well-engineered jobs. If the aggregate gradings improve, the result is over-sanded mixes, and it is extremely doubtful if our present day placing crews would find anything objectionable about such concrete.

In discussing the proper analysis of the engineers' specification, attention was called to the fact that many factors, especially air entrainment might underline the arbitrary cement factor as a minimum instead of a maximum. Since our factory job has a requirement for 4,000-lb compressive strength air-entrained concrete for the outside loading dock, let's see just what air entrainment may mean in high strength concrete.

Going back to our base mix for 4,000-lb non-air-entrained concrete, and using our original aggregate analysis, we have already determined that we can use 11.50 cu ft or 2,013 lb of coarse aggregate. The balance of the cubic yard, 15.50 cu ft of mortar, will now be composed of cement, water, entrained air and sand. But, our water requirements will be lower, as shown in Table 4, our water cement ratio will have to be lower, as shown in Table 3, requiring a higher cement content, and we will have to consider the entrained air as a definite part of our yield.

• **Table 4 suggests** that we calculate our water requirements as 32 gal per cu yd for 4-in. slump concrete, and recommends 4.5% total air content. In Table 3 (p. 102, January, 1955), we find that 4,000-lb air-entrained concrete calls for a water-cement ratio of 5 gal per sack of cement, which, without air entrainment, would produce 5,000-lb concrete. However, since our entrained air may permit us to reduce water by 4 gal per cu yd, the penalty is not quite as severe as it may seem.

The total water of 32 gal per cu yd divided by the water cement ratio of 5 gal per sack of cement gives us a cement factor of 6.4 sacks per cu yd. The absolute volume of our cement will be 3.06 cu ft (6.4x.478). The volume of our water will be 4.27 cu ft (32 divided by 7.5). Total air of 4.5% will contribute 1.22 cu ft to our yield. Combined yield of the cement, water and air is 8.55 cu ft, leaving 6.95 cu ft of sand to produce our mortar volume of 15.50 cu ft; at 165 lb per cu ft, our sand weight will be 1,147 lb.

• **On a saturated surface dry basis,** the proportions for our air-entrained concrete of 4,000 lb compressive strength are:

602	lb (6.4 sacks)	Cement
1,147	"	Sand
2,013	"	Stone
267	"	Total Water

A suitable air-entraining agent or inter-ground air entrained cement would have to be employed. Although the air entraining agent inter-ground with the cement at the mill is the least expensive, since it is furnished at no cost as a part of the cement, most engineers are leaning away from inter-ground cement, which does not permit ready control on the job. Air contents are more easily controlled by additions made at the mixer which can be adjusted in quantity to produce higher or lower amounts of air.

• **The exact proportioning** of air-entrained concrete is far more difficult than non-air-entrained, and a prior knowledge of the cement and aggregates is of utmost importance in intelligently computing the cost of large volumes of concrete. The ACI has provided a guide in estimating water requirements, but job experience will usually indicate that the amount of water per yd varies with the cement factor. In lean mixes, water can be reduced to a very satisfactory degree, and the reduction is often enough to offset the lower water cement ratio made necessary by the entrained air. In the richer mixes, the entrained air has far less effect on workability, and the water reduction may be of a minor nature.

Our air-entrained mix, for example, may require 33 or 34 gal of water per cu yd instead of 32, since it is in the rich range. Consequently, our cement factory may have to be increased even more to produce the specified strength. Only field experience on the job will give us the answer to that very important question.

Air-entraining agents do not all react in the same way. Some are available which have other values sufficient to overcome the loss of strength in the rich mixes. It will pay the contractor dividends to be familiar with these and to employ them where air-entrained concrete is specified.

* * *

The 15th article in this series will appear in the March issue.

W. E. Logan & Sons, Muskogee, Oklahoma

"4 years before overhaul with Cities Service lubricants!"

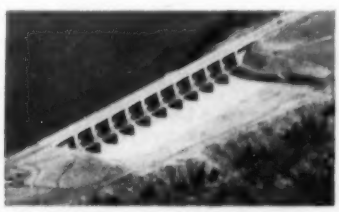
Builders of dams, airports, and a large percentage of the roads in Oklahoma, W. E. Logan & Sons use as many as 84 pieces of equipment on one job at one time.

Says Logan's Master Mechanic, Charlie Wills, "Often we have as many as four major road jobs going at once, and we average 240 hours a month on every piece of equipment we've got, year around."

Grueling work? You bet! And for the last 20 years Logan has relied on Cities Service to help get that work done. Here's the balance sheet: Using Cities Service C-300 Motor Oil, Trojan Greases, and Trojan MP-140 Gear Oil, Logan's D-8 Cats run four to five years before major overhaul. After four years, bearing inserts are worn less than .003 inches, liners less than .007 inches. In addition, Trojan MP-140 Gear Oil has kept gear cases so free of sludge that after five years, paint inside the cases is "perfectly clean."

That's only part of Logan's story. But it's mighty important—and it may become part of your story when you start using the Cities Service line of highest quality petroleum products. Learn the whole profitable story. Contact your nearest Cities Service representative or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

Machines, machines, and more machines! W. E. Logan & Sons uses as many as 84 pieces on a single job, all Cities Service fueled and lubricated. Many use Cities Service Hydraulic Oils, too.



The Tenkiller Ferry Dam Reservoir in Oklahoma was one of Logan's biggest jobs. An earthen dam, it required moving 10,809,580 yards of earth, took 3 years to complete.

And always close by—Cities Service. For the past 20 years, wherever there's been a piece of Logan equipment at work, Cities Service Lubricants have been at work too.

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Bituminous plant processes millionth ton

Back in 1947, the Ramsay-Bird Construction Company of Regina, Saskatchewan, bought a new central-mix bituminous plant. Its first job was an 82 mile section of Highway #39 between Weyburn and North Portal, on the United States border.

In October, 1953, while producing material for the Trans-Canada Highway it turned out its *millionth ton* of precision-mixed material and was still going strong!

The Ramsay-Bird plant, pictured above, is a PIONEER Model 101, rated to deliver 80-110 yards per hour. Originally picked because of its reputation for easy portability, high output, and exceptional durability, it has lived up to full expectations in all these respects.

Easy to move

Called on to operate in all parts of the province and under a wide variety of conditions, the unusual portability of this plant has proved an immense asset. The 101 consists of three main units, each complete in itself, and mounted on its own rubber-tired chassis. Since no special alignment is necessary, set-up is quick and simple.

Efficient collector saves fines

In operation, material enters the drier where it is constantly agitated and tumbled while being heated to the necessary temperature. A highly efficient multiclone dust collector recovers more than 90% of the fines.

Hot material from the drier is elevated to a 2½ deck screen, and separated into 3 specification sizes. These are reblended in the desired proportions *before* addition of the bitumen.

From the pre-mix chamber, dry aggregates pass to the spray chamber and twin pugmill where mixing is completed.

Accurate mixing of aggregate and bitumen is obtained by a mechanically interlocked bitumen pump and aggregates feeder. Material passes through the plant in an uninterrupted flow with no batch-weighing needed. This continuous, *automatic* proportioning completely eliminates the human element and assures the correct mix at all times.

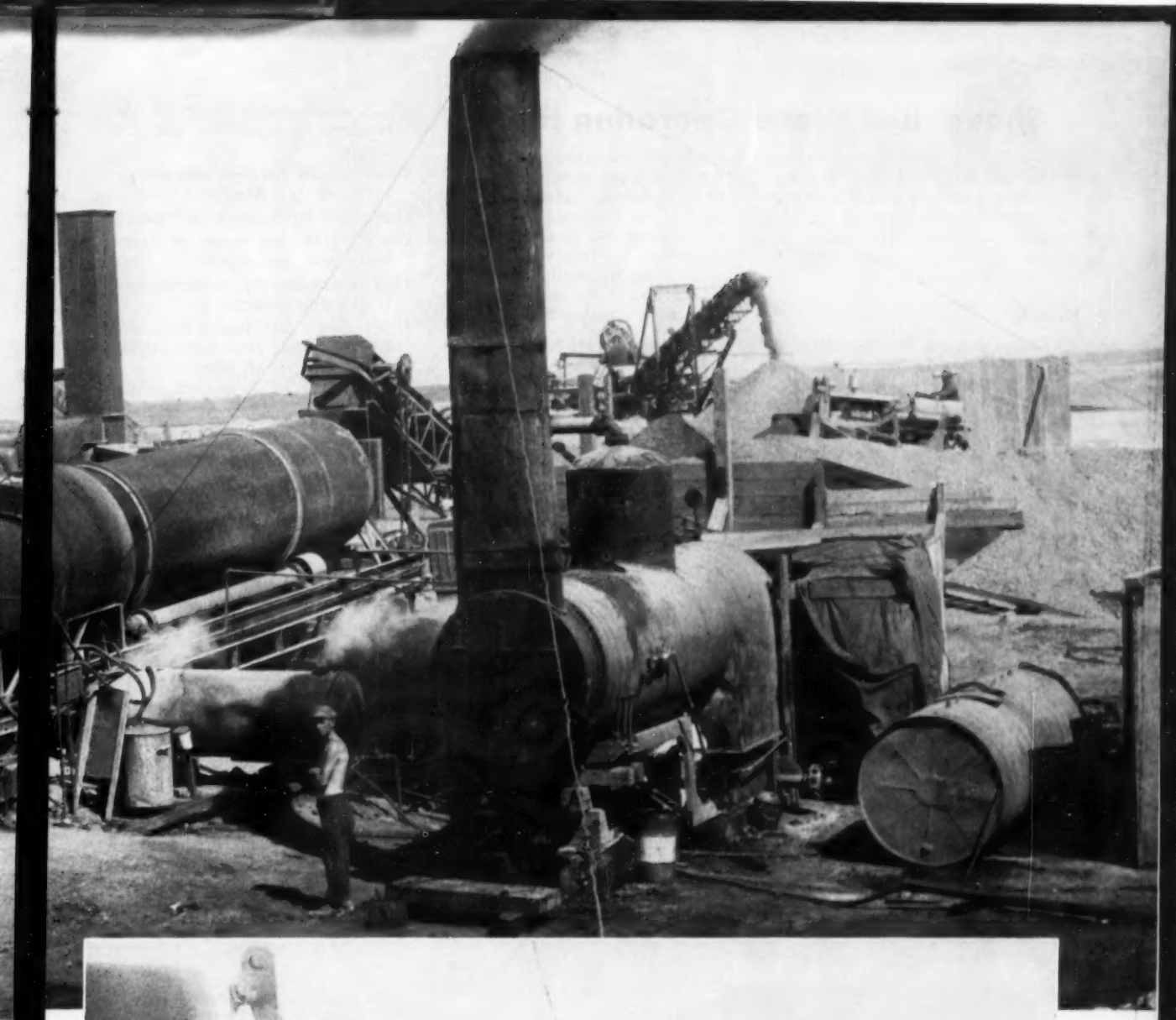
Gauges, indicators, and control levers are centrally located so the operator can direct the entire mixing process from a single platform. For example, the inspector can vary the oil content by remote control of the bitumen pump without slowing the plant. He can also adjust the control gates of the aggregates feeder while the plant is operating.

Designed for non-stop operation

Gates on the discharge hopper can be closed to cut off flow to trucks while waiting for an empty one to pull in . . . again without slowing the plant. The clam design allows loading without segregation.

The 80-110 yard "101" is the largest of three highly portable PIONEER continuous mix plants. The new "81" is rated to deliver 60-80 yards per hour. The "51" is rated at 40-60 yards.

For further details on PIONEER Bituminous Equipment, write Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota (a subsidiary of Poor & Company, Chicago) or see your nearest PIONEER distributor.



John Irving, Ramsay-Bird superintendent, points to PIONEER drier as it processes its millionth ton of material. Left to right on platform are Mike McCormick, plant foreman, Len Day and Lorne Mills. On the ground are Irving, Jack Dunlop, and Doug Ramsay, director. At the time the photo was taken the plant was producing material for the Trans-Canada Highway east of Regina, expected to be one of Canada's finest.

Pioneer *Continuflo* **EQUIPMENT**

Shovel and Crane Operating Hints

R. P. SULLIVAN, service manager for the Marion Power Shovel Co., takes time regularly to write about the care and maintenance of his company's products. Here is some of his basic advice, applicable to any shovel or crane.

Shovels

Whenever possible, slice up through the bank rather than jam the dipper full at the bottom and drag it all the way up.

Keep the drive chains to your front when you're moving through soft material. Material that reaches the chain will be carried away from the sprocket rather than into it. This will tend to reduce the possibility of material getting between the sprocket and chain causing breakage.

Don't sweep the pit with the dipper.

Don't swing before finishing hoisting.

You'll cause undue strain on the machine by uprooting with the dipper.

Don't extend handles into greenhorns on the dead end.

Don't jack the boom with handles.

Don't strike the boom or tread belts with the dipper.

Don't shake the dipper excessively to dislodge material.

Don't crowd the dipper stick until the dipper stick stop strikes the shipper shaft sleeve.

Draglines

Make sure you have firm control of the dragline bucket and do not let it drop.

Excessive dirt should not be piled in front of the dragline. This practice wastes time and power and wears out the drag-in cable.

Dirt and mud brought in by the drag cable should be removed from the fairlead and surroundings.

Use a dump cable of proper length when making replacement.

Backhoes

Don't use the hoe boom and extended dipper as a pick to pry loose hard materials. The dipper arm may hit the topside of the boom and cause damage.

Cranes

Safe stability of a crane should be checked if there is any question about the load to be lifted or about the footing.

A crane should be reeved up with the proper parts of line recommended for the load to be lifted.

Do not propel the crane with the boom at a high angle.

When traveling with a load suspended, snub the load to the turntable to keep it from swaying out and upsetting the machine.

Loads should not be dropped fast and stopped suddenly.

Magnetic Inspection

EVEN THE MOST careful visual inspection may fail to give mechanics a true indication of the condition of various steering system parts. Euclid Division of General Motors Corp. now recommends that Pitman arms, steering arms, spindles and related parts be magnafluxed at least every 4,000 hr of operation or once a year.

NOW!

Whiteman

. . . THE FIRST NAME IN PORTABLE CONCRETE EQUIPMENT IS THE LAST WORD IN VIBRATORS

THERE'S a new standard of comparison in concrete vibrators! Five years of intensive research, engineering and job-testing by America's foremost concrete equipment manufacturer have produced these three new Whiteman models . . . built for outstanding performance and durability.

Specific vibration requirements of any size can be handled with maximum efficiency with this Whiteman "Tailored to the Job" equipment. Components are completely interchangeable.

Vibrator heads are designed and precision built to rigid Whiteman standards. 1¼" to 3" diameters. 11" to 17" lengths. Core and casing available in lengths from 10 ft. to 30 ft.

Before buying any vibrator, be sure to see Whiteman and compare. Send today for complete information.

MODEL GW

with wheelbarrow base. For heavy duty work. Reliable 6 HP Wisconsin engine. 9,000 VPM.

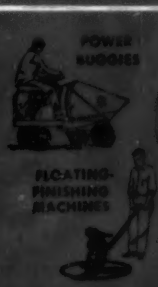
MODEL SW

with swivel base. For use on average jobs. 2½ HP Briggs & Stratton engine. 4,000 VPM.

MODEL EW

features new, highly efficient Whiteman electric motor with centrifugal blower cooling system. 9,000 VPM.

A complete line of vibrator accessories is available.



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THE LEADER IN CONCRETE EQUIPMENT

Whiteman Manufacturing Co.
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Los Angeles 39, Calif.

Please send prices, literature and name of distributor for ☐ Vibrators, ☐ Screeding Machines, ☐ Power Buggies, ☐ Floating-Finishing Machines.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

COURSE OF ASPHALT 3 ft wide laid by Blaw-Knox Model 95 widener (formerly an APSCO) improves a narrow Pennsylvania highway in a hurry. LeRoi-powered and self-sufficient, machine can be adjusted for width of spread as it rolls along.

Adaptable Widener Modernizes Roads

HIGHWAY MAINTENANCE and modernization, although not as spectacular and impressive as construction of new roads, is a rapidly expanding business, involving new techniques and improved equipment to keep pace with the country's needs.

In two recent road-widening operations, a specialized machine proved its worth by placing large tonnages of both asphaltic and portland cement concrete at rates far exceeding estimates.

Black Top Paving Co, of Washington, Pa., used a Blaw-Knox Model 95 road widener to place asphaltic binder and wearing courses for a distance of almost 11 mi in western Pennsylvania. The existing 16-ft reinforced concrete highway was being widened to 22 ft, with 3-ft strips along each side, placing a 12-in. aggregate base and topping that with 2½ in. of bituminous surface strips.

The contractor set some impressive production figures on this job. In one 9-hr day his Model 95 placed 440 tons of binder in a 3-ft width for a distance of 21,900 ft. The next day, the crew placed 583 tons in widths varying from 3 to 6 ft over a linear distance of 27,500 ft. The nine-man crew was not out to set records but kept the job rolling to make the most of good weather.

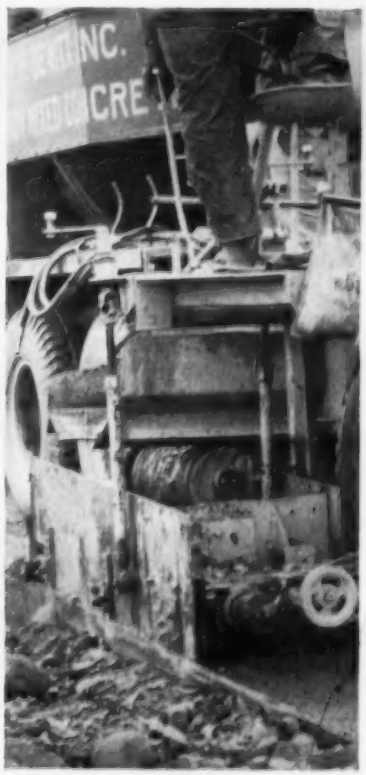
Outer edges of widening strips are squared off neatly with a strike-off plate, and widening or narrowing of strips is controlled by the operator as the widener moves along. Steel-wheel rollers did the compacting.

A similar B-K Model 95 road widener, modified to place Portland cement concrete with slip forms, was used in a test-widening operation between Cohocton and Wayland, N. Y., by Contractor Holmes & Murphy, Orchard Park, N. Y.

Concrete strips 2 ft wide and 8 in. deep were laid at an average of a little more than 2,200 ft per day, although speed of laying depends much upon the supply of concrete. Two truck-mixers supplied the widener. The 95 will lay concrete in widths from 2 ft to 6 ft. It is a 2- to 3-hr job to change the machine from an asphalt spreader to a concrete placer.

STRIP OF CONCRETE 2 ft wide is placed by modified Model 95 as fast as truck-mixer unloads 2½-3-in. slump concrete. Same machine converts either to asphalt or concrete spreading in from 2- to 3-hr time. Lays strips up to 6 ft wide.

RUBBER BELT in floor of surge hopper receives concrete from trucks and delivers to left side where concrete drops between existing highway slab and adjustable traveling form in foreground. This work has been accepted by state highway departments.



BELT-DRIVEN VIBRATOR is integral with strike-off mechanism. Laying capacity generally is limited only by concrete supply.

an EXTRA MARGIN of Strength

without Excess Weight

The unique two-section boom used on Bucyrus-Erie 4½- to 8-cu. yd. Ward Leonard electric shovels solves one of the problems of front-end construction on heavy-duty excavators in a sound, practical way. It provides the strength needed to withstand the shock loads of digging, yet is remarkably light in weight to help keep swing inertia low.

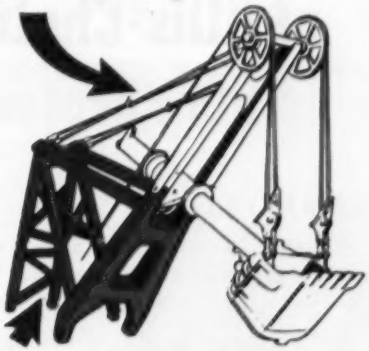
The two-section boom is only one example of *that extra margin* built into Bucyrus-Erie heavy-duty excavators—an extra margin in design *that pays off in extra loads and more output.* There's much more to the story—the tubular dipper handle, the independent rope crowd, the twin dual hoist ropes, the deck location of crowd machinery, the improved dipper design. Write for complete information on the model of your choice—the 4½-yd. 110-B, the 6-yd. 150-B, and the 8-yd. 190-B.

201.54C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

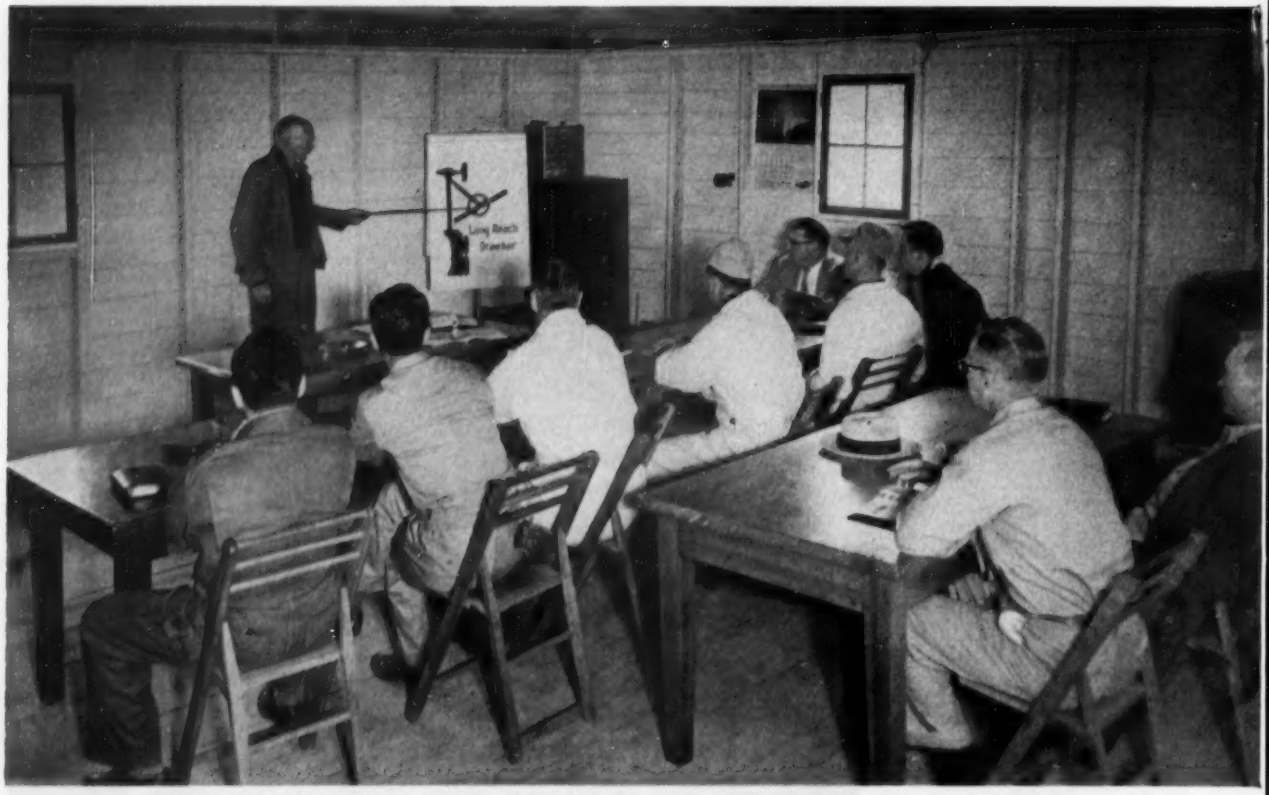
Upper boom section, bridge-strand connected to the A-frame, is relatively lighter in construction, because it has to carry only the loads resulting from the pull of the hoist ropes and from the acceleration and deceleration of the swing.



Sturdy lower section, securely attached to the A-frame by pin-connected struts to form an integral part of the machine, has ample strength to take the stresses and shock loads of the digging cycle. Widespread boom feet provide a brace effect to take swing loads . . . no cable suspension or sway braces are required.

(Advertisement)

Preventive Maintenance Cuts Service Cost — Increases Earning Capacity



PREVENTIVE MAINTENANCE TRAINING KITS — movies, slides, charts and literature are available to help train your personnel. Your Allis-Chalmers dealer will present it for you at your convenience, or arrange to have a factory man do the job. And it can be tailored to suit your specific machines and job conditions.

How contractors can take full advantage of Allis-Chalmers Dealer Service Plan to help protect profits

BENEFITS:

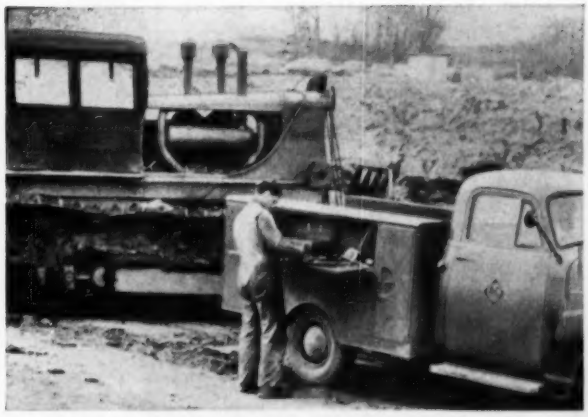
Better performance — more time on the job — longer equipment life — lower maintenance cost — higher resale value

Experience has convinced many contractors that the Allis-Chalmers Dealer Service Plan is geared to keep equipment operating efficiently. They have found that taking full advantage of such service is easy, and that it pays big dividends. Here's why.

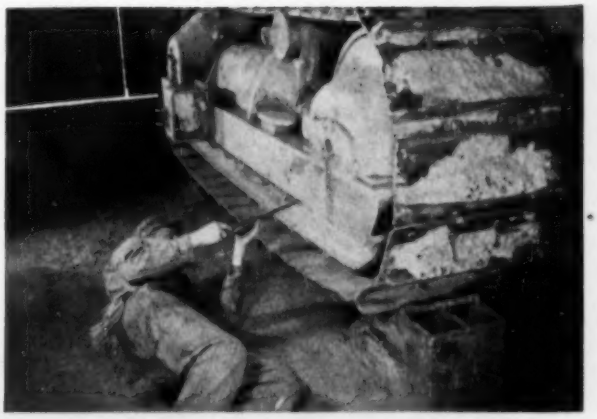
Allis-Chalmers dealers offer them a *planned* approach to service, right from the day their equipment is delivered. It covers everything from service schools to lubrication schedules, and from parts to preventive maintenance.

You owe it to yourself to take a look at the advantages this plan offers. Then see your nearby Allis-Chalmers dealer soon and ask him to give you all the facts.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

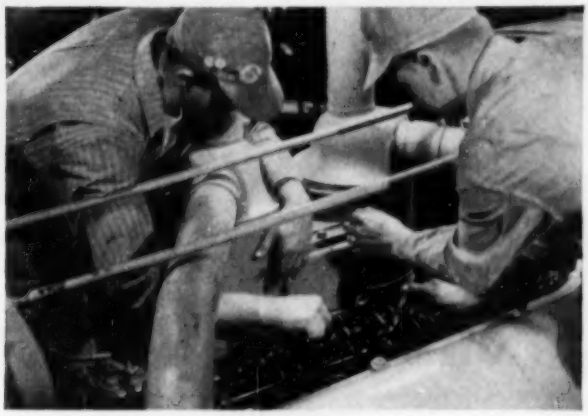


FAST PARTS SERVICE — Factory-built Allis-Chalmers parts are stocked in quantities by the *dealer*, to give you parts service as close to your job as posible. And remember, experienced equipment men agree it pays to use only standard factory-built parts.

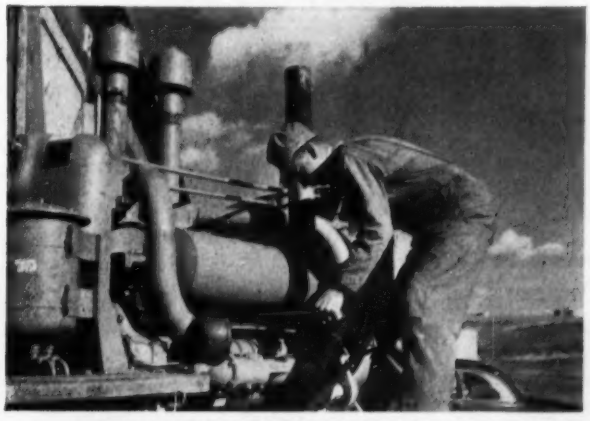


SCHEDULED CHECKUP PROGRAM — Your Allis-Chalmers dealer will help you plan a schedule for all maintenance to keep your equipment operating efficiently. You'll save on repair bills, avoid costly downtime, get far better performance, longer life from your machines.

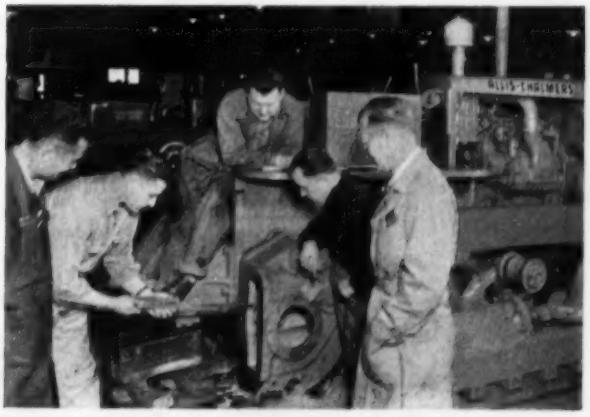
OPERATING TIPS — Allis-Chalmers dealer servicemen are trained to give your operators all the facts they need to operate your equipment most productively. For example, one of the most important things for an operator to know — how to recognize when adjustments should be made.



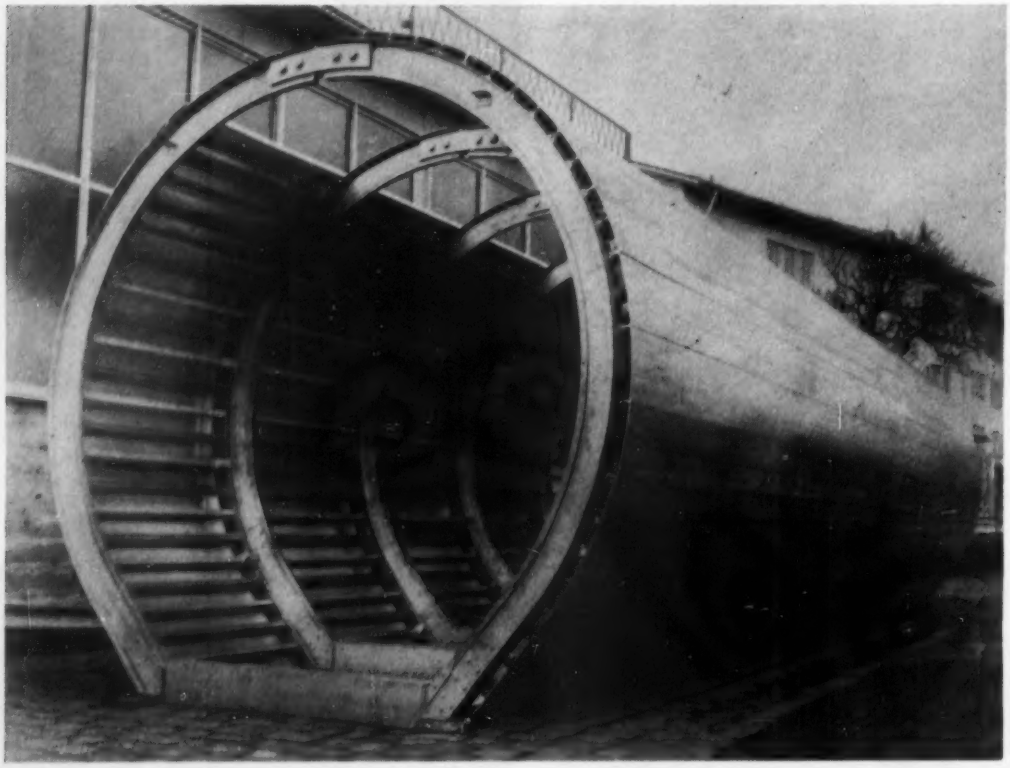
SPECIALIZED FACILITIES at your Allis-Chalmers dealer include factory-approved tools and all necessary service equipment. Factory-approved methods are used to save you time and money, assure finest workmanship, to help you get full value for your equipment dollar.



FACTORY-TRAINED DEALER SERVICEMEN have the specialized experience to help you spot trouble symptoms fast, help you prevent costly breakdowns. Their training never stops; they make it a *policy* to stay abreast of every development so they can be of real value to you. And they're ready to go when and where they're needed.

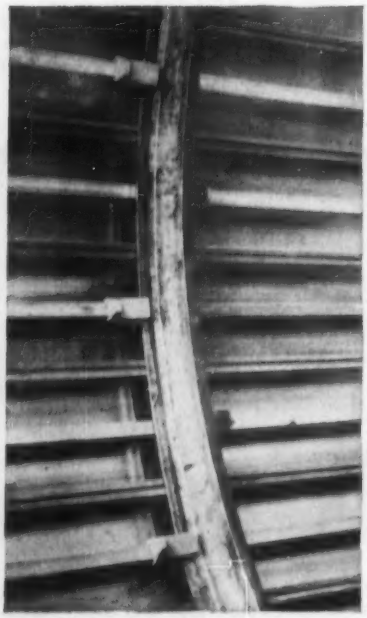


FACTORY SERVICE SCHOOL TRAINING is open to your servicemen just as it is for dealers. Training is by men who know the equipment best. Visual aids and easily understood literature are used. And your men discover that Allis-Chalmers design simplicity makes the equipment easy to learn . . . easiest of all to service.



Lightweight, fast erection and stripping appeal to . . .

Swiss Trying Out Aluminum Tunnel Forms



T-SHAPED RINGS support ends of extruded sheets with integral ribs. Drive-on wedges lock all parts together instantly.

ALUMINUM FORMS for concrete are being tried out on several tunnel lining jobs in Switzerland, following a successful experiment carried out during construction of the Marmorera Dam.

Because aluminum weighs much less than either wood or steel, larger components, fabricated outside a tunnel, can be carried in and a complete form assembled and stripped with less labor and time. It is reported that the aluminum facing surfaces are oiled for use, that they strip readily and can be used repeatedly.

This new type form was developed by Albert Aeberli, of Zurich, with an assist from the Societé Anonyme pour l'Industrie de l'Aluminium, Lausanne - Ouchy, Switzerland. It is known as Aeberli-AIG "shuttering."

Forms consist of light sheets and supporting rings made of an aluminum alloy, "Anti-corodal B." The sheets are provided with ribs and are produced in an extrusion press. When assembled, they form a cylinder which is practically smooth on its outer surface, the ribs projecting inwards. Cylinders may be reinforced at intervals by annular members and can easily be assembled and taken down.

The sheets are so formed that when they are placed edge-to-edge, they form a cylinder with a cross-section corresponding to the cross-section of the desired form. They can be connected at the stiffening ribs by rivets, bolts or conical pins.

Two or more sheets can be connected side-by-side to form a single wide sheet, of which, for example, 16 to 18 would be sufficient when the bore to be concrete-lined is to have an internal diameter of 8 ft. The supporting rings may then consist of curved, extruded light-metal profile sections, which are connected end-to-end to form the complete circle. Thus, they can be easily dismantled. Some of the sections could be connected by hinges.

Aluminum panels may be up to

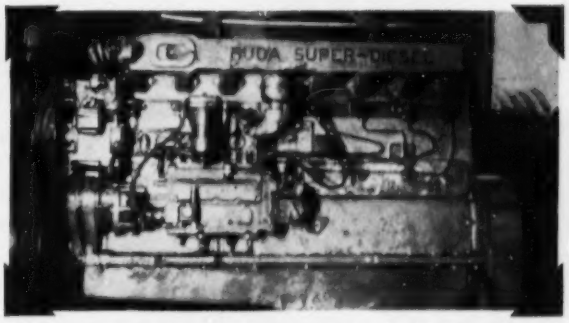
THE ENGINEER'S REPORT

DATA

LUBRICANT	RPM Delo Oils
UNITS	21 Buda diesel engines
OPERATION	Hauling ore
CONDITIONS	Heavy duty — 8-15% grades
PERIOD	6 years
FIRM	Bagdad Copper Corp., Bagdad, Arizona

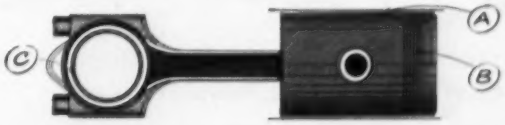
No stuck rings in 21 engines in 6 years hauling ore!

HAULING 22-TON LOADS up 8 to 15% grades out of the Bagdad Copper Corp. open-pit mine, 21 Buda diesels have had no stuck rings, no clogged ring grooves since using RPM DELO Special Lubricating Oil for the last 6 years. Engines operate 2 shifts a day, 6 days a week in heavy abrasive dust. Torn down after 7000 hours, all parts in the engine above were exceptionally clean and all bearings were good.



BIGGEST OFF-HIGHWAY TRUCK IN THE WORLD (above) was recently built for Bagdad Copper Corp. It weighs 96,000 pounds, hauls 75 tons. RPM DELO Special Lubricating Oil was also selected for its two 350 H.P. supercharged Buda diesels because of the excellent service Bagdad has had from this oil.

How RPM DELO Oils keep engines clean and prevent wear



A. Contain special additives that provide metal-adhesion qualities...keep oil on parts whether they are hot or cold, running or idle.

B. Anti-oxidant resists deterioration of oil and formation of lacquer...prevents ring-sticking. Detergent keeps parts clean, helps prevent scuffing.

C. Special compounds stop corrosion of any bearing metal, and oil foaming in both wet and dry sump engines.

There is an RPM DELO Oil to meet every heavy-duty engine operating condition.
FREE BOOKLET on the RPM DELO Oils gives you complete information. Write or ask for it today.

RPM DELO LUBRICATING OILS

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

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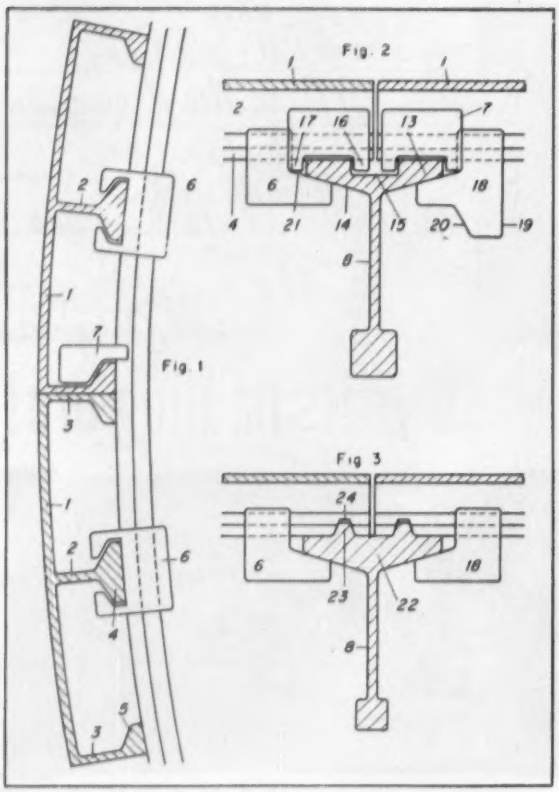
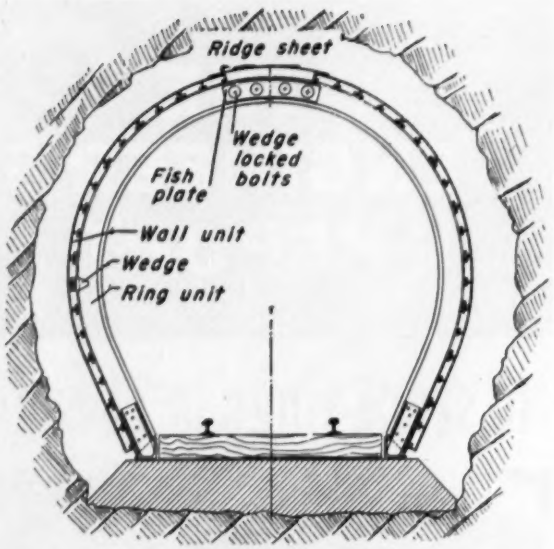
THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado





TUNNEL CROSS-SECTION SKETCH shows how concrete base is poured first and aluminum forms then erected on it. When pouring, sheets are placed up sides, as concrete level rises.

DETAILS SKETCHED in Figs. 1, 2, and 3 illustrate relation of supporting rings to face sheets. Shown are several types of guides, wedges and the inclined surfaces that create snug fits.

about 16 ft in length and up to 10 in. in width and have a three-web cross-section. In tunnel construction the rings, which have a T-shaped cross-section, are normally placed at intervals of about 1 yd, but this can be varied as needed. The supporting rings preferably are arranged to be on the joints between the sheets. The latter should be secured to the rings by keys or wedges driven into position and ultimately removed with a hammer or mallet. Stiffening ribs of the sheets preferably are shaped so they can be used as guide rails for the retainer wedges.

Details of Sketches

In the accompanying illustrations (opposite page) *Fig. 1* shows two sheets (1) in cross-section, their ribs being numbered (2) and (3) and thickened at (4) and (5). Their thickened part, or foot, serves as a guide rail to a wedge (6). The Centering piece is marked at (7).

Fig. 2 shows the connection of the supporting ring to the sheets. The ring (8), which is shown in section, is provided with a large head or flange (13), having inclined surfaces (14) and a longitudinal groove (15). The projections (16) of the centering pieces (7), which are fixed permanently on the ribs of the sheet (1), engage in the longitudinal groove (15). The projections (17) form a stop for the two edges of the flange (13), so that accurate centering is obtained.

On the flanges (4) of the ribs (2) two movable wedges (6) and (18) are arranged. The wedge (6) is shown in front elevation in *Fig. 1*. The piece (18) is provided with a projection (19) to facilitate dismantling, for example, by striking face (20) with a hammer.

To secure sheets on the supporting ring, the ring is first engaged with the centering pieces (7), after which the two wedges are driven with a hammer on to the flange (13); whereby the inclined faces (21) of the wedges are pressed against the inclined faces (14) of the flanges (13) to make a secure connection.

In the modification shown in *Fig. 3*, the centering pieces (7) have been omitted. The flange (22) of the supporting ring (8), instead of being provided with a longitudinal groove, is provided with two ribs (23), which enter into corresponding grooves (24) in the sheets (1). The wedging pieces (6) and (18)

ALUMINUM TUNNEL FORMS . . .
Continued

are the same as in the example illustrated in *Fig. 2.*

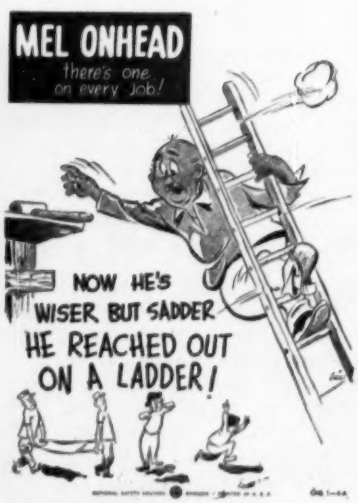
Instead of using sheets having the shape shown in cross-section in *Fig. 1,* sheets having a greater number of ribs, as well as sheets having only two ribs, could be used.

When concreting, a base is poured across the floor of the tunnel. This serves as a foundation and guide for the aluminum form. Then two or more supporting rings are assembled and one or two of the face sheets attached at the bottom on each side of the tunnel.

Concrete is poured between the sheets and the tunnel wall. It can be vibrated, if desired. As the level of concrete rises, additional sheets are placed until the full circle is complete at the crown.

Stripping forms for the next section of the tunnel is accomplished simply by knocking out the retaining wedges, disassembling the rings and removing the individual sheets. Since forms are oiled, there is no danger of the aluminum being attacked by alkalis in the concrete.

The Societé Anonyme pour l'Industrie de l'Aluminium, Lausanne, which has been quite helpful in gathering this information, has assembled some performance figures, timewise. It is reported that crews using these aluminum forms erect, strip, clean and grease them in less than one-half the time they need for similar operations on wood or steel forms. The surface of the concrete wall produced is entirely satisfactory.



From Every Standpoint / output • size • efficiency

Chrysler Industrial V-8 Engines are the best power you can install

Chrysler Industrial V-8 Engines are . . . pound for pound . . . the world's most powerful gasoline industrial engines.

To prove that statement—let's look at the facts. In the charts below, we compare Chrysler Ind. 24A V-8 Engine with similarly equipped products of five principal competitors. Information on each competitive engine is based upon factory specifications. Check the Chrysler advantages—each of them is an important factor in the selection of a power plant.

Engine	Horsepower and Piston Displacement	Pounds per Horsepower	Fuel Consumption—pounds per BHP per hour	Horsepower per Cubic Inch Displacement	
Engine A	110 at 2200 RPM 358 cu. in.	(Stripped Engine) 7.38	.54	.307	**CHRYSLER ADVANTAGES OVER ENGINE A** . . . delivers 18 more horsepower . . . weighs 96 pounds less with 24% less weight per horsepower . . . uses 7.5% less fuel at average operating speed . . . delivers 26% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	(Stripped Engine) 5.58	.50	.387	
Engine B	104 at 2400 RPM* 330 cu. in.	(Stripped Engine) 6.92	(Information not available)	.315	**CHRYSLER ADVANTAGES OVER ENGINE B** . . . delivers 34 more horsepower . . . weighs 5 pounds less with 25% less weight per horsepower . . . delivers 32% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	138 at 2400 RPM 331 cu. in.	(Stripped Engine) 5.18	.50	.416	
Engine C	99 at 2200 RPM 320 cu. in.	(Stripped Engine) 7.64	.56	.309	**CHRYSLER ADVANTAGES OVER ENGINE C** . . . delivers 29 more horsepower . . . weighs 60 pounds less with 27% less weight per horsepower . . . uses 10.5% less fuel at average operating speed . . . delivers 25% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	(Stripped Engine) 5.58	.50	.387	
Engine D	117 at 2200 RPM 317 cu. in.	6.5**	.50	.369	**CHRYSLER ADVANTAGES OVER ENGINE D** . . . delivers 11 more horsepower . . . weighs 19 pounds more *but* with 6% less weight per horsepower . . . delivers 5% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	6.1**	.50	.387	
Engine E	97 at 2200 RPM 372 cu. in.	(Complete Engine) 12.85	.58	.260	**CHRYSLER ADVANTAGES OVER ENGINE E** . . . delivers 31 more horsepower . . . weighs 395 pounds less with 48.7% less weight per horsepower . . . uses 14% less fuel at average operating speed . . . delivers 49% more horsepower per cubic inch displacement
Chrysler Model Ind. 24A	128 at 2200 RPM 331 cu. in.	(Complete Engine) 6.6	.50	.387	

**Information not available at 2200 RPM* ***Complete engine less flywheel housing*

These are not just "paper advantages". They show up on irrigation pumps, in construction and road building equipment, in farm combines, and in many other applications. Thanks to modern engineering, hemispherical-design combustion chamber, short-stroke, low-friction construction, Chrysler offers durability and output in amazingly small, lightweight power packages.

And remember Chrysler Industrial Engines can be factory equipped for operation with gasoline, natural or L-P gas.

See a dealer or write: Dept. 102, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.

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INDUSTRIAL

ENGINES
Horsepower With A Pedigree

INDUSTRIAL ENGINE DIVISION
CHRYSLER CORPORATION

BETTER THAN THE BEST BUT PRICED WITH THE LOWEST

On-the-Job
CONTRACTOR-LABOR RELATIONS

By LEON B. KROMER, JR.

The Administration's Program—1955

THE PRESIDENT'S MESSAGE to Congress indicated that he would submit, as was suggested in this column last month, a recommendation to up the minimum wage under the federal Fair Labor Standards Act (Wage-Hour Law) from $.75 to $.90 per hr. In addition, the President wants those covered extended from the present estimated 23,000,000 to include employees in other industries. The most notable exemptions from the law's provisions at present are retailing with an estimated 7½ million employees and certain construction workers.

In the meantime, the Department of Labor released figures to prove that increasing the minimum wage from $.40 to $.75 per hr in 1950 had only minor effect on employment. Studies were made in low-wage industries (southern saw-milling, fertilizer, men's wear and wood furniture) which indicated that the new 75c rate had no significant effect on employment.

Check CM&E, January, p 138 as to what increases in the minimum rate can mean to you as a contractor. Remember that employees working on certain types of new construction, as well as alterations, repairs and expansion of existing plants producing goods for interstate commerce are covered.

On Taft-Hartley

No major changes in the basic federal labor relations law are foreseen. The President, in his Message, again requested the changes in the Taft-Hartley Act that he asked for last year. (CM&E Feb., 1954, p. 132) None got through Congress.

Included in the proposed amendments are several that will affect construction. They are:

(1) Less use of secondary boycott injunctions. Instead of being mandatory as at present, the Regional Director of the National Labor Relations Board could use his discretion as to whether he would seek an injunction.

(2) Permit contractors and unions to negotiate agreements before men are hired and include in such agreements a union security provision requiring employees to join the union within seven days after hire.

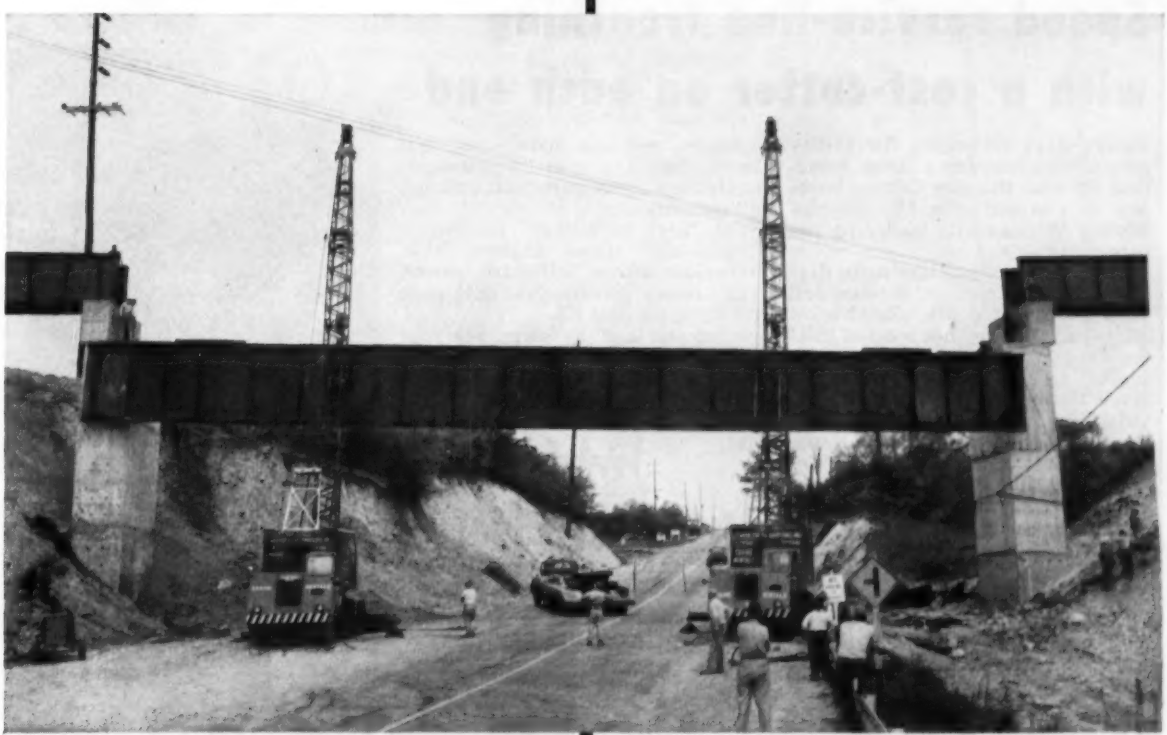
(3) Relax the prohibition of secondary boycott to exclude strikes or "concerted action" against (a) employers doing "farmed-out" work for another employer whose workers are on strike and (b) a contractor who with other contractors is working at the same site. Under (b), if a strike or picket line is set up against a contractor and

(Continued on page 134)

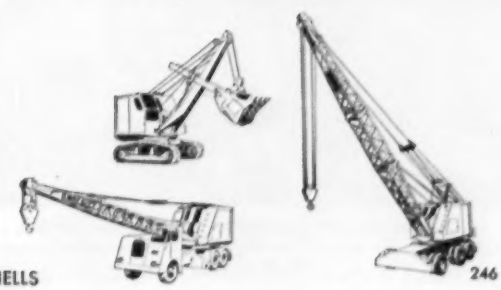
52 ton girders placed in four hour deadline

Just east of Chattanooga the Southern Railway, route of the famous "Chattanooga Choo-Choo", crosses Highway 58, an important link with TVA dams, reservoirs and hydroelectric plants to the north. To erect girders for the new overpass on this well-traveled highway, Atlanta Steel Erectors, Inc., of Atlanta, Georgia, had to work fast because the highway could only be closed to traffic for four hours at a time. But with two 25-ton BAY CITY CraneMobiles employing 55-feet of boom on a twin lift operation, both of the 52-ton, 115-ft. long girders went up on schedule.

One of the girders was hauled from a railroad siding two miles away, and the highway closed to traffic. When the girder was set in place, the highway was reopened while the other girder was brought up. Each operation was completed by the team of CraneMobiles, part of a fleet of four owned by Atlanta Steel Erectors, well within the four hour time limit. Industrial Steel Company was general contractor and steel fabricator on the job. For performance like this on your difficult erection jobs, consult your nearest BAY CITY dealer for complete information on the BAY CITY Cranemobile.



Write for catalogs describing BAY CITY Crawlers of ½ yard and up and BAY CITY CraneMobiles and CraneWagons in capacities to 25 tons.



BAY CITY

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

246

Service lines go in fast with the new Ottawa backhoe on one end of the MM UTIL Wheeler and heavy-duty loader on the other. Unit trenches, loads, backfills and levels.

Speed service-line trenching with a cost-cutter on each end

Heavy-duty trenching for utility service lines becomes a faster, lower-cost job with this new Ottawa backhoe on one end of a Minneapolis-Moline Wheeler and loader on the other.

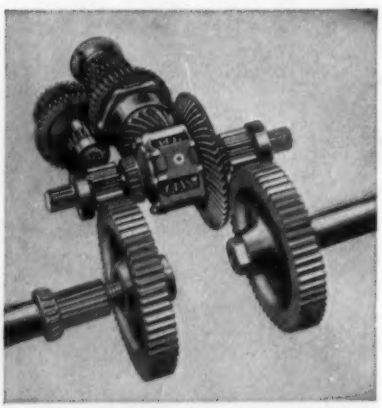
This Wheeler backhoe unit digs clean, square trenches, ditches and footings to a 9 ft. depth, offers bucket widths to 36". Backhoe reaches 15'4" for digging, 8'3" for dumping into highest trucks. Loader backfills and levels to complete the job with cost-cutting speed.

A complete line of unitized attachments makes full use of extra Wheeler power, greater Wheeler torque at moderate engine speed. Attachments include forks for loading and hauling, lifting cranes, excavating and loading buckets, dozer blades, scrapers, winches, snowplows, material handling and maintenance equipment for construction, mining, all industry.

With "high turbulence" gasoline or "turbo-cell" diesel engines, MM Wheelers deliver full-rated power, extra-heavy construction that pays off in longer unit life.

Before you buy any loader, see your Minneapolis-Moline dealer-distributor. Have him demonstrate to you that low-cost Wheelers will *return* your money *sooner*, *pay* you *longer*.

MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA



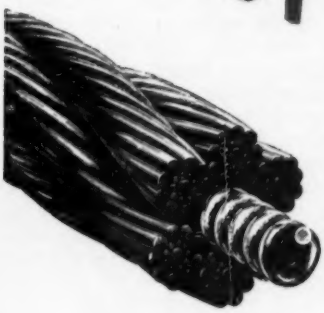
UTIL Wheelers pay you in longer tractor life with heavier construction, live rear axles 3 inches in diameter, bull gear final drive, greater bearing surfaces. Transmission and differential operate in a constant oil bath.

Mowing around job sites, along highways, in plant yards is a low-cost operation with this flexible hydraulic drive mower mounted on the 30 hp. RTI Wheeler.

This Wheeler and hydraulically-controlled scraper offer leveling accuracy in a low-cost package. Heavy-duty 3-point hitch controls scraping depth, provides rigid mounting.

Another J&L First—

SpringKore WIRE ROPE



Combines Flexibility and Crush Resistance

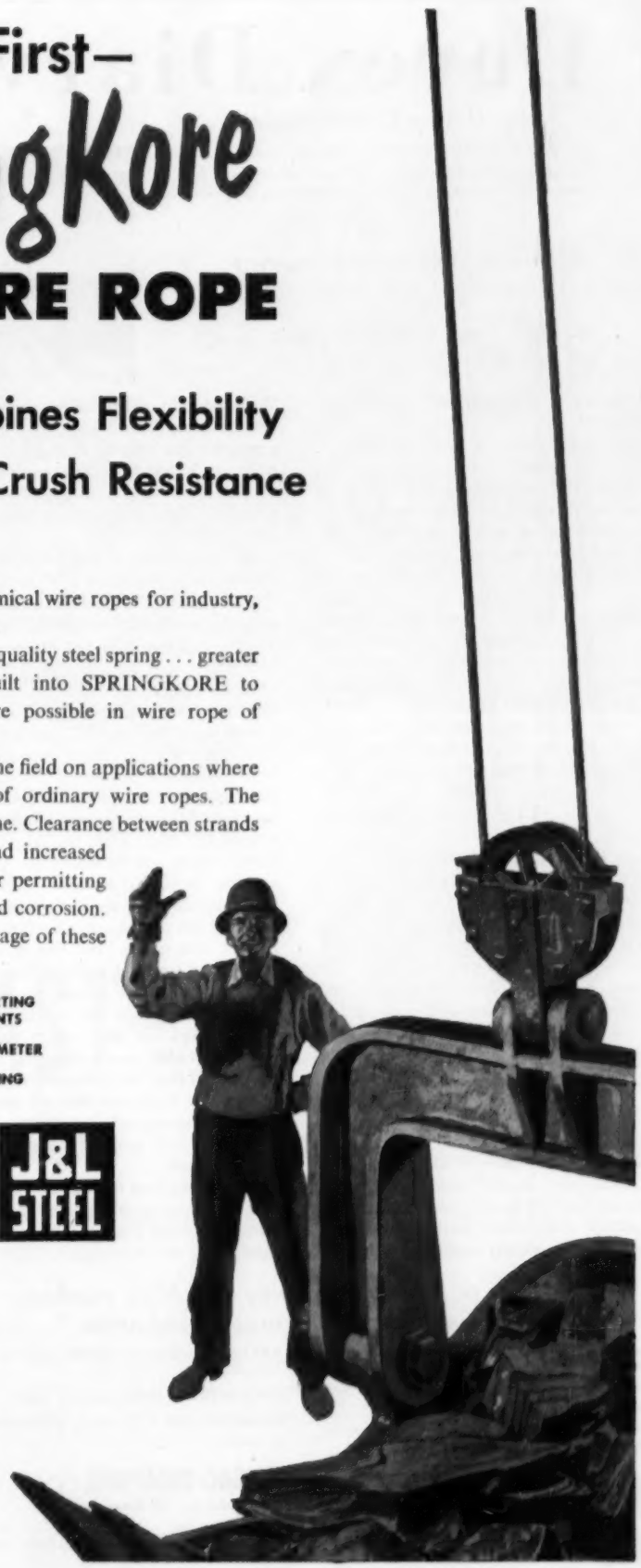
Always working to develop better, more economical wire ropes for industry, J&L has scored another first—SPRINGKORE.

The unique properties of a tightly coiled high quality steel spring . . . greater flexibility and resistance to crushing—are built into SPRINGKORE to provide resiliency and toughness never before possible in wire rope of equivalent strength and cost.

SPRINGKORE has *already* proved itself in the field on applications where heavy crushing action limits the service life of ordinary wire ropes. The diameter stays uniform for a longer period of time. Clearance between strands is maintained resulting in greater flexibility and increased fatigue life. The coiled spring forms a reservoir permitting excellent lubrication to reduce internal wear and corrosion.

Specify new SPRINGKORE and take advantage of these dollar-saving features:

- LONG TERM FLEXIBILITY
- RESISTANCE TO CRUSHING ACTION
- COMPLETE LUBRICATION
- MORE SUPPORTING CONTACT POINTS
- UNIFORM DIAMETER
- BETTER SPOOLING
- LESS INSIDE STRAND WEAR



Jones & Laughlin
STEEL CORPORATION — *Pittsburgh*

J&L STEEL

For further information, write for J&L's new booklet, "New Wire Rope for Industrial Uses."

Jones & Laughlin Steel Corporation
3 Gateway Center, Dept. 437, Pittsburgh 30, Pa.
Please send me a copy of your booklet, "New Wire Rope for Industrial Uses."

Name_____

Company_____

Address_____

LABOR . . . Continued from page 130

employees of other, neutral contractors refuse to work because of the strike or picket line, their action would not be considered a secondary boycott.

Definite recommendations are to be made to clarify the "no-man's land" that now exists on federal-state jurisdiction over labor disputes. The Supreme Court has said that the federal labor law's jurisdiction is exclusive. This means that even though the National Labor Relations Board may, by administrative discretion, decline to assume jurisdiction over a particular case, the states have no power to act. Many contractors could be involved in such a case. The states do have, of course, the power to protect life and property and maintain public order during a labor dispute.

Health and Welfare Funds

After more than a year of investigating the administration of union health and welfare funds (CM&E, Oct., 1954, p. 177) New York State's Superintendent of Insurance, Alfred J. Bohlinger, submitted his recommendations to the Governor. To eliminate what he describes as "serious abuses" in about one-fifth of the more than 500 funds in the state, Bohlinger proposes:

(1) A ban on commission payments to union, management or welfare fund officials or to members of their families;

(2) Compulsory registration of all funds on a form that would disclose all persons who receive compensation from the funds together with the amount paid;

(3) Examination by the state of all funds at least once every 5 yr, oftener if considered necessary, for the protection of the beneficiaries;

(4) Filing of annual reports within the State Insurance Department on all operations of the fund;

(5) A more clear-cut definition of the legal obligations of both union and management trustees in discharging their responsibilities for efficient management of the fund.

(6) Annual reports by the trustees to all contributing employers and

(Continued on page 138)

FOR A
RECORD BLAST—
explosives research pays off

A hill of hard, seamy granite 65 feet high, 100 feet wide, and 600 feet long, located between two sections of a new highway near South Billerica, Massachusetts, was broken to grade level on August 19, 1954, by the largest single blast ever made on a New England highway construction project.

The mound of granite was leveled by a controlled blast (small photo) of 26,400 pounds of Gelamite® dynamite primed with Hercules® Short-Period Delay Electric Blasting Caps. The excellent fragmentation is apparent in the broken rock pictured above.

Whether your blasting problems are routine or unusual, whether they involve construction, mining, quarrying, or other industrial applications—you can depend on Hercules' experience and knowledge in the manufacture and use of blasting materials to make your job easier.

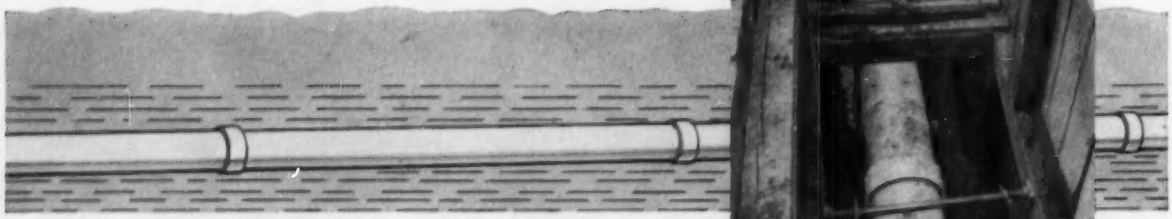
HERCULES POWDER COMPANY
INCORPORATED
Explosives Department, 974 King Street, Wilmington 99, Delaware

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

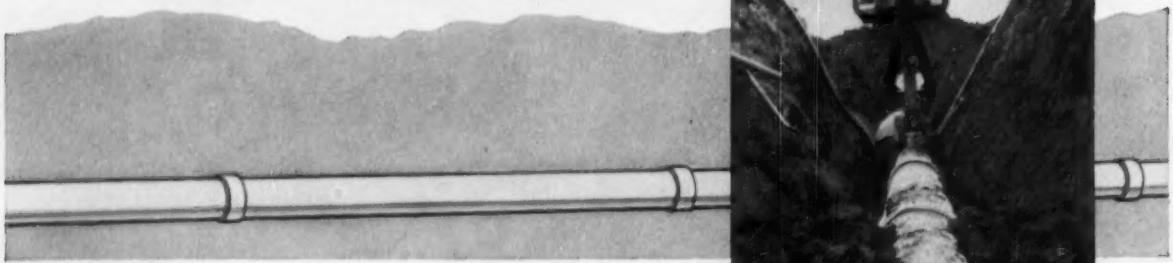
Z995-1

(Advertisement)

Low land, flat grades?
High water table?



Rolling land?
Excavation problems?



Whatever the problem—

Transite® Sewer Pipe

speeds installation, cuts operating costs

IN a wide range of conditions, Transite Sewer Pipe and its Ring-Tite Coupling provide installation and operational *plus-advantages* that add up to important cost savings.

[Flow Coefficient n–0.010] For instance, with Transite Sewer Pipe, specified velocity of flow can be attained at a minimum grade. Initial savings may also be reflected in smaller pipe sizes. Its unusually low flow coefficient (n=0.010 derived from the Manning formula) makes this possible. This means less cubic yards of excavation, and may also mean . . . elimination of pumping . . . location of treatment plant at higher elevation . . . lower installation costs especially if in wet or ground-water conditions.

[Tight Joints] Where ground water conditions exist (due to a constant water table or during seasonal rains) Transite's Ring-Tite Couplings are *tight* . . . thus treatment-plant dollars are spent to treat *normal* sewage only, not excessive and unnecessary infiltration.

[Strength] Made of asbestos and cement, Transite Sewer Pipe is strong and durable. It withstands heavy load stresses, eliminates expensive cradling in many cases. It is available in two strength classifications.

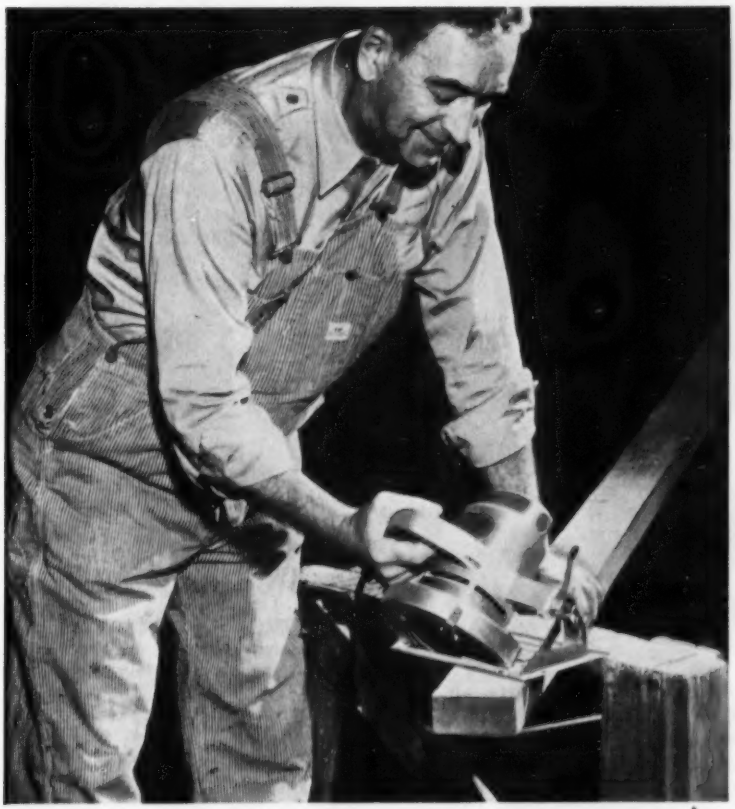
Transite Sewer Pipe is easily handled, quickly assembled and lowered into trench where it adjusts more accurately to line and grade. The Ring-Tite Couplings are easily and quickly pulled, forming tight, flexible joints that *start* tight and *stay* tight.

For your copy of TR-94A, the helpful widely used Sewer Design Flow Chart, based on the Manning formula, write Johns-Manville, Box 60, New York 16, N. Y.

Johns-Manville TRANSITE SEWER PIPE

THE PIPE WITH THE TIGHT JOINTS

3 New Heavy-Duty SKIL Saws
at Lowest Prices in History!



New 6½" Model 864 only $59.50

—and it cuts 2 x 4's at 45° bevel!

More powerful motors—plus the famous SKIL Saw features—*yet here are the lowest prices in SKIL history for genuine heavy-duty SKIL Saws!*

6½", 7¼" and 8¼"—a saw for every cutting job. Call your SKIL Distributor for complete information.

New 7¼" Model 874
Only $69.50

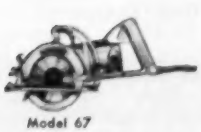
New 8¼" Model 884
Only $79.50

Have All These SKIL Features and Save, Too!

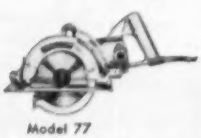
- Extreme light weight and the famous SKIL balanced design for easy handling.
- Easy, fast cutting in any position.
- High speed blade.
- Rugged, heavy-duty motor.
- Strong die-cast aluminum motor housing.
- Ball and needle roller bearings throughout.
- Quick-acting depth and bevel adjustment.
- Calibrated rip fence for both right and left hand cuts.
- Safety guard retracting handle for pocket cuts and abrasive disc use.

BRIEF SPECIFICATIONS

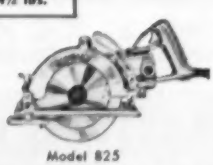
Model No.	864	874	884
Blade Diameters	6½"	7¼"	8¼"
Maximum Depth of Cut	2⅛"	2⅜"	2⅝"
Depth Cut at 45°	1¾"	1⅞"	2⅛"
No-Load Speed	6500 r.p.m.	6000 r.p.m.	6000 r.p.m.
Net Weight	10¾ lbs.	13½ lbs.	14½ lbs.



Model 67



Model 77



Model 825

SKIL PORTABLE TOOLS

Made only by SKIL Corporation
formerly SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
3601 Dundas Street West, Toronto 9, Ontario
Factory Branches in All Leading Cities

ONLY SKIL OFFERS YOU A COMPLETE SAW LINE INCLUDING THESE SUPER DUTY SKIL SAWS!

LABOR . . . Continued on page 134

covered employees in language they can understand.

Further, the Superintendent of Insurance recommended that a code of ethics be established to control payment of fees and commissions by insurance companies.

Most building trades funds in operation in the state were found to be honestly and efficiently managed. Many have been audited annually by certified public accountants with financial reports issued to all interested parties. A number of them have expert insurance actuaries as consultants who attend and actively participate in trustees' meetings.

Union welfare funds are big business in New York. These funds collect some $475,000,000 annually in contributions from employers and workers and have accumulated reserves of $2,900,000,000. They provide, in varying degrees, protection to about one-quarter of the state's 12,000,000 residents.

Feel Like a Movie?

INDUSTRIAL-TYPE MOVIES can be an easy, yet one of the best methods of learning, not only what goes into making up a product but also what it will do under various field conditions. Here are a few movies that have recently been released for this purpose by manufacturers:

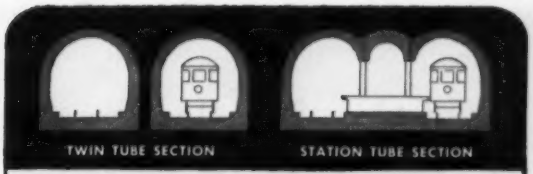
"The Perfect Crime"—released by Caterpillar Tractor Co., Peoria, Ill. Its running time is 20 min, it is sound-color and was produced with the cooperation of the National Safety Council's Construction Section and members of the Associated General Contractors of America. The theme of the movie is drawing a comparison between an actual crime and one not usually considered a crime—murder on the highway. It cites an apathetic public for its indifference to this tragedy. It's a good movie, and arrangements can be made to see it through any Caterpillar dealer.

"The Marion 191-M" released by Marion Power Shovel Company, Marion, Ohio. This is a 16mm color-sound feature telling the story of the world's largest shovel on two crawlers.

Rockland Allied Equipment Corp., Providence, R. I., has a number of movies available showing their land-clearing rakes mounted on different types of tractors. When making your request for a movie, specify the make of tractor you wish to see working.

BLAW-KNOX STEEL FORMS . . .

simplify construction of Chicago's new Congress Street Subway



In Chicago's newest subway, Contractor S. A. Healy is forming the stations *with the same forms used for the tunnels*, and without removing them from the excavation! An extra panel is simply inserted into the forms as shown above to provide the arch for the stations with minimum trouble.

IT'S ANOTHER WAY BLAW-KNOX HELPS CUT CONCRETING COSTS

This simple solution to the problem of making stations in a subway tunnel is typical of the way Blaw-Knox Steel Forms and Blaw-Knox Engineer's Consultation Service can help reduce the number of necessary steps in your forming operations, save time and materials, and cut concreting costs.

It will pay you to call in Blaw-Knox engineers in the preliminary planning stages of your jobs, to solve difficult forming problems *before* they're on the drafting board. Write or call today!

WRITE FOR BULLETIN 2430
It contains special Blaw-Knox Steel Forms suggestions and details about the Consultation Service available to any contractor without obligation.

BLAW-KNOX COMPANY
STEEL FORMS DEPARTMENT • BLAW-KNOX EQUIPMENT DIVISION
P. O. BOX 1198 • PITTSBURGH 30, PA. • PHONE STERLING 1-2700

BLAW-KNOX STEEL FORMS CONSULTATION SERVICE

BLAW-KNOX EQUIPMENT DIVISION

CAN YOU MATCH THIS *Athey* PRODUCTION?

6 yards in 1.3 minutes! Loading sand and gravel, this HiLoader cut loading time 65% to 80% for this material producer.

118 truck-loads in 7 hours! Loading excess material from windrow on a surfacing contract, this HiLoader left the subgrade clean and smooth.

1000 yards of ⅛" rock a day! Loading material from stockpile for a paving contract, this HiLoader keeps big truck fleets on the move.

360 yards—60 minutes! Loading root-choked earth from a building project, this HiLoader heap-loaded 6-yd. trucks in 50 seconds.

10 CUBIC YARDS A MINUTE . . . is the rating of the capacity of the Athey HiLoader . . . continuous production at that capacity is limited only by your trucks and their spotting ability. The swiveling conveyor turns to either side to start loading the minute trucks are in place. Your Athey-Caterpillar Dealer can show you the HiLoader's features that give you big production and profits to match. Ask him!

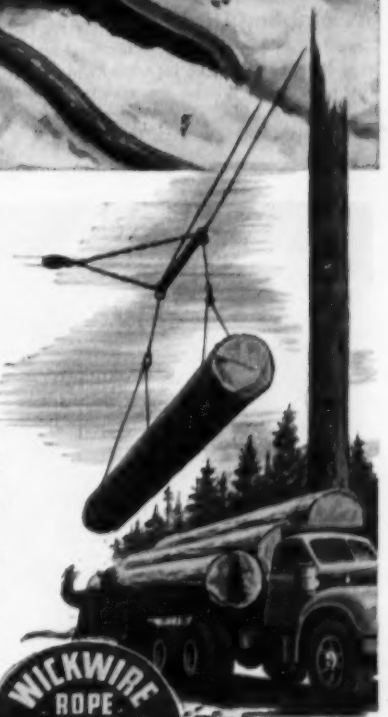
ATHEY PRODUCTS CORPORATION 5631 West 65th Street • Chicago 38, Illinois

now—the logs are lighter with MUSCLES OF STEEL

Gone are the days when muscles of man and beast were the only means of loading and hauling big timber out of the woods. Supplying present-day lumber needs is a job that would lick ten thousand Samsons.

It's a job that demands *muscles of steel*—rugged wire rope that lifts and pulls the heaviest logs with strength to spare.

We of Wickwire play a big part in furnishing these *muscles of steel* to American industry. Wherever wire rope is used—timbering, drilling, construction, mining, fishing, materials handling—there also you'll find Wickwire Rope helping to do a better, more efficient job. That's the reason for the quality and extra care that go into its making.



***every** industry benefits from wire rope*

WICKWIRE ROPE

CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

WICKWIRE ROPE A CF&I PRODUCT

2535

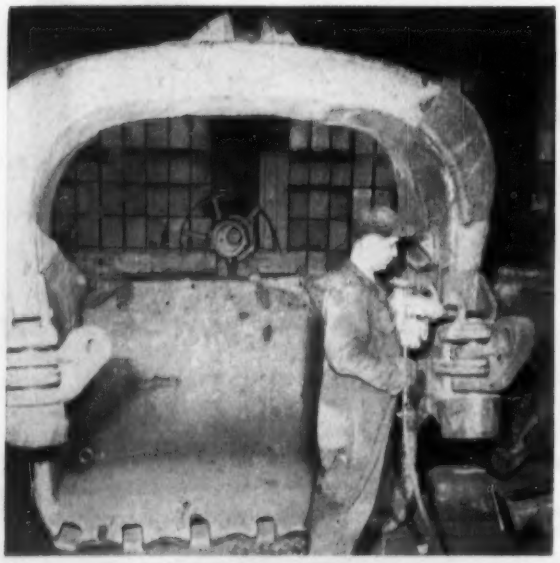
THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

Assembling Drain Pipe . . .

Standing on top of a 90-in. sectional-plate drain pipe, a workman runs ¾-in. bolts with an Ingersoll-Rand 534 air impact tool. Holes are first lined up by drifting and then bolts are inserted alternately from inside and outside. Contractor reports air tool cut 500 man-hr off the estimated hand-wrench time.

Changing Tires . . .

Twelve bolts on one of the big dual tires of a 35-ton Euclid dump truck are quickly removed with an air impact tool. Tire changing takes twice as long with hand wrenches. Much heavy work of this type is done in Central Penn's 300-x60-ft maintenance shop. The company employs 35 skilled mechanics.



Removing Hitch Bolts . . .

A 1¼-in. securing bolt in the hitch casting of a 6-yd bucket is removed with an Ingersoll-Rand 538 air tool. Using only one tool, two men can replace the manganese steel lip on this bucket in from 3 to 4 hr. With hand wrenches, it would take 3 to 4 days. The job requires 64 large bolts.

Air and Electric Impact Tools Save Time and Labor

AIR AND ELECTRIC IMPACT TOOLS do a fast job of running nuts and bolts. They are easy to handle, simple to operate, and save manpower. A wide selection of models and sizes is available for turning anything from a wood screw to a 1½-in. bolt. Generally, air tools are used on heavy-duty work and electric tools on light-duty work.

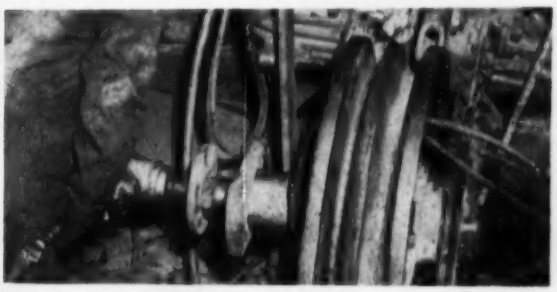
Progressive contractors continue to find new applications for the tools in both construction and equipment maintenance. Central Pennsylvania Quarry, Stripping and Construction Co. of Hazleton, Pa., for instance, uses about seven Ingersoll-Rand Impactools of various sizes in both the shop and field. On a 700-ft stretch of sectional plate drain pipe requiring more than 12,000 nuts, the contractor used one air tool and saved about nine days of installation time.

Installing a New Bucket Plate . . .

Giant 8-yd bucket gets a new bottom plate. After the 1-in. plate is flame cut to size and ground at the edges, it is bent around the curvature of the lip by the powerful impacts of an air tool. When the plate is pulled in position, it is welded and the weld is heat-treated. The bolts then are removed and replaced with rivets.

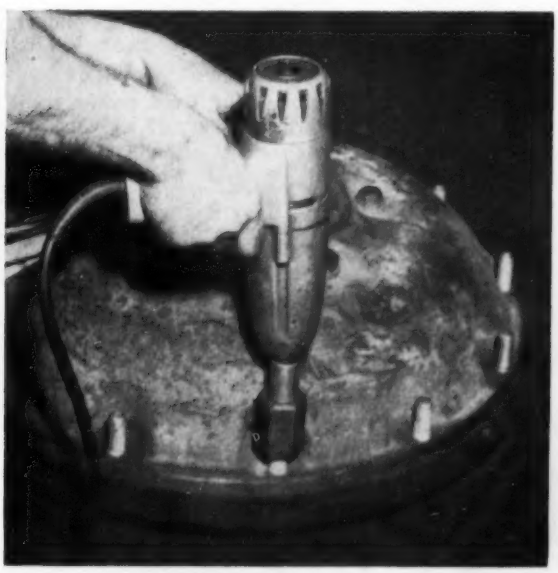
Disassembling a Transmission . . .

Mechanic in truck overhaul section uses Ingersoll-Rand 4U electric impact drill to disassemble a transmission on a 15-ton Euclid dump truck. The 4U is also used as a wood screw-driver and for all jobs in which the bolt size does not exceed ⅜ in. Air and electric tools can be used in the field, as well as the shop.



Pulling a Pulley Bushing . . .

Impact tool pulls a pulley bushing into place at the end of a crane boom. Another important shop use of the impact tool is on dozer tracks. Bolts that secure the track pads have to be tightened continually. And with Central Penn's fleet of about 35 dozers, that involves several thousand bolts.



Running Wheel Studs . . .

Lightweight electric impact tool runs studs on front wheel of 15-ton Euclid dump truck. Mechanics in Central Penn's truck-overhaul shop keep at least two of these tools busy at all times. The company maintains more than 100 pieces of equipment, plus 74 off-the-road trucks and 60 over-the-road trucks.

Bolting a Cutting Edge . . .

A new 10-ft cutting edge is placed on a scraper with 38 ¾-in. bolts. With an impact tool, the job takes only 1 hr; hand-wrenching would take 3 hr. In the field, air tools are powered by mobile compressor rigs, and electric drills are powered by portable generating sets or directly from the equipment.

Check the looks!

Ice, Sleet, Snow—SLOW!

Try the comfort!

Then, to get the most for your money

LOOK UNDER THE HOOD!

A revolution in truck power is taking place . . . sparked by the Ford Short-Stroke V-8!

When a new type of engine prolongs piston ring life as much as 53% . . . gives gas savings of up to 1 gallon in 7 . . . cuts engine friction as much as 33% to liberate more *usable hauling power*, you know it's bound to go over big with economy-minded truck users.

A new MONEY MAKER for heavy construction work—the '55 Ford T-800 Tandem Axle Big Job! Powered by the mighty Short-Stroke 170-h.p. *Cargo King* V-8, it is rated for 40,000 lbs. GVW, 60,000 lbs. GCW. *Master-Guide* Power Steering is standard equipment!

Small wonder, then, that the truck industry is now investing millions of dollars *under the hood* . . . in a revolutionary switch to Short-Stroke V-8's.

But Ford, pioneer in V-8 truck power, made the switch over three years ago. And right *now*, you'll find a *proven*, modern Short-Stroke engine under the hood of every Ford Truck. Only Ford offers a full line of Short-Stroke engines . . . four V-8's and a Six.

Make sure your next truck is a modern Money Maker. Look *under the hood!* Look for a modern Short-Stroke engine with a "stroke" as short as, or shorter than its "bore." And remember, you get the full advantages of Short-Stroke design *today* in any Ford Truck you choose.

Call your Ford Dealer or write: Ford Division, Ford Motor Co., Dept. T-9, Box 658, Dearborn, Mich.

FORD

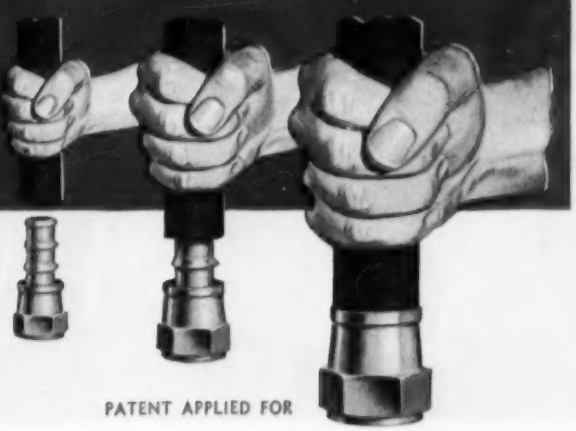
Triple Economy

TRUCKS

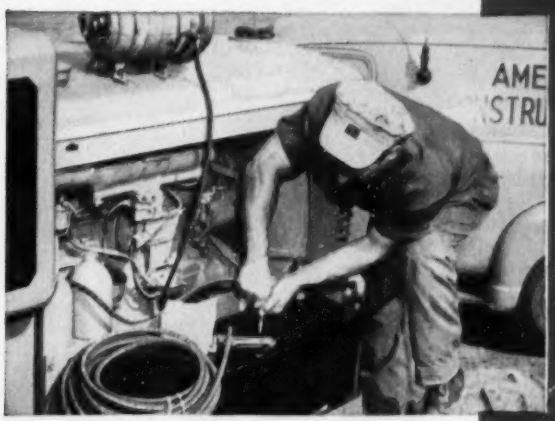
THE MONEY MAKERS FOR '55

Master Mechanic Nick Martino of
American Construction Company, Inc.,
Hartford, Connecticut

Makes and Installs Oil Lines in Minutes!



PATENT APPLIED FOR



■ Hose is cut to length and pushed on the *SOCKETLESS* fittings by hand.

■ With bulk hose and a few fittings, hose lines can be made right in the field.

■ *SOCKETLESS* hose lines are flexible ... easy to install even in confined areas.

"Aeroquip's superior quality hose and reusable fittings mean less headaches due to downtime, and great savings in future replacements," says Mr. Martino. "Aeroquip hose has completely eliminated our stocking problem; now we just cut the length of hose we need and push it on the fittings."

Keep your equipment on the job. Use this cost-cutting 'Aeroquip idea' for all fuel, oil, water, and air lines. See your distributor or write for information.

AEROQUIP

SOCKETLESS

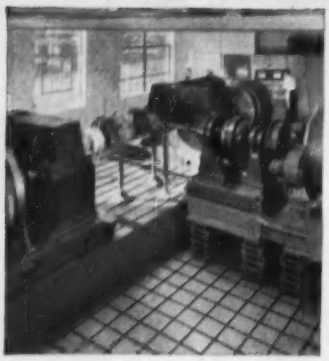
FITTINGS AND HOSE

Aeroquip

REG. TRADE MARK

AEROQUIP CORPORATION, JACKSON, MICHIGAN

LOCAL REPRESENTATIVES IN PRINCIPAL CITIES IN U.S.A. AND ABROAD • AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD



In the indoor "Torture-Chamber" TDA proves axle-gearing quality, too!

Here, we have capsuled a multi-thousand acre proving ground into one room! Here, our engineers can put 50 years' experience in building axles for trucks, buses, trailers, farm machinery, to use. Under scientific control and analysis, they run "shift tests," axle housing "bend tests," twist axle shafts 14° back and forth 36 times a minute, 24 hours a day, days on end. Or simulate a "chuck hole" shock every 4 seconds, 24 hours a day for months! A TDA exclusive!

WE SHIFTED TDA AXLES

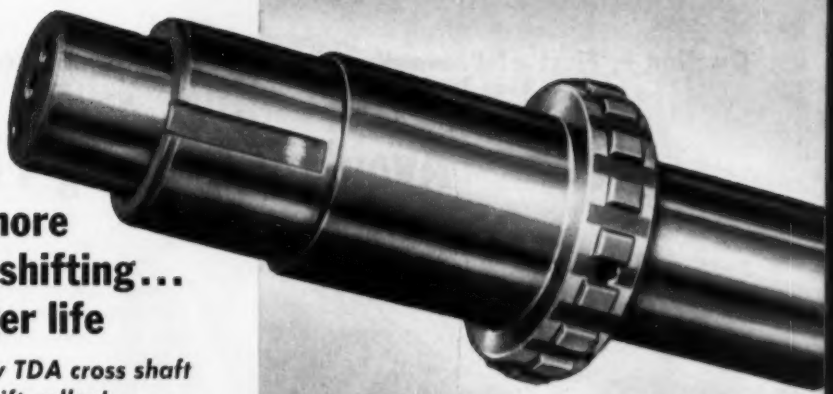
on 5 tractor-trailer combinations axle operation on record!

5 vehicles, averaging over 130,000 miles each—each averaging 2.7 shifts per mile . . . and all are still going strong!

Here's how TDA backs up indoor "Torture Chamber" tests with grueling outdoor, on-the-highway torture!

We installed 2-speed cross shafts and shift collar assemblies of the new TDA design, in five 5-ton tractor-trailer combinations. *Then the fun began!* Never before has there been such a murderous test of 2-speed axle shifting! All up and down the east coast, driving steadily day and night—shifting from fast to slow speeds and back again—averaging 2.7 times every mile, these tractor-trailers roared on to an average of over 130,000 miles apiece! That's 650,000 miles, 1,755,000 shifts in all—without noticeable wear, or repair stops. And the test goes on!

Meet our "Torture Tester"! With graphs showing speed and torque performance under any operating conditions he chooses—with special dials, recorders and electronic devices—he actually *drives* axles with scientific accuracy from his chair!



for more positive shifting... longer life

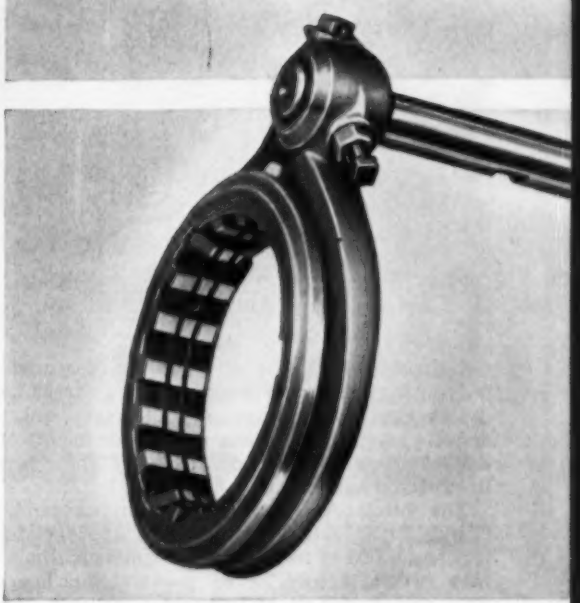
exclusive, new TDA cross shaft and shift collar!

Another TDA advantage! Only Timken-Detroit 2-Speed Axles have this advanced principle of shifting—"Torture-Tested" indoors, road tested under the most gruelling outdoor driving conditions ever! The result? Longer life, less maintenance, repairs and downtime; lower operating costs!

Note that in the new TDA Cross Shaft (above), a large *single row* of driving teeth gives greatly improved locking action with the new TDA Shift Collar teeth. Wear is reduced. There is no "hopping" out of gear.

New TDA Shift Collar (right), has *three* sets of teeth for driving and engaging — center teeth for locking only. Far less wear on engaging edges. Locking functions completely separated from driving and engaging functions!

Push-Button Operated. All TDA 2-Speed Axles are push-button shifted, with automatic activation by your choice of electricity, vacuum or air.



1,755,000 TIMES

...in the severest 2-speed

TIMKEN Detroit AXLES

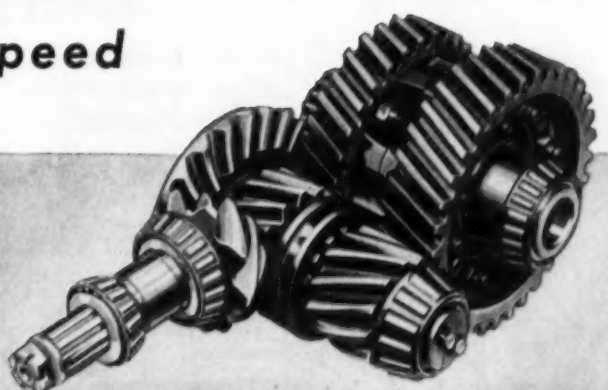
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted Standard — TRADE MARK REGISTERED

"TORTURE-TESTED"
to Save Money on the Job

World's Largest Manufacturers of Axles for Trucks, Buses and Trailers

Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Canton and Newark, Ohio New Castle, Pennsylvania



Unequalled Gear Selection! TDA 2-Speed Axles are available in *three* different ratio "spreads" to meet any transmission-engine combination: 28%, 37% or 49%. Unlike ordinary designs that are limited to 37%, this TDA selection may be obtained simply by changing the low speed helical gear set. Exclusive, double-reduction design eliminates small, complicated parts. Man-size gears and bearings mean longer wear, quieter operation. Can operate in any gear ratio indefinitely without overheating!

Caution Is First of Preventive Musts in Your Safety Program for...

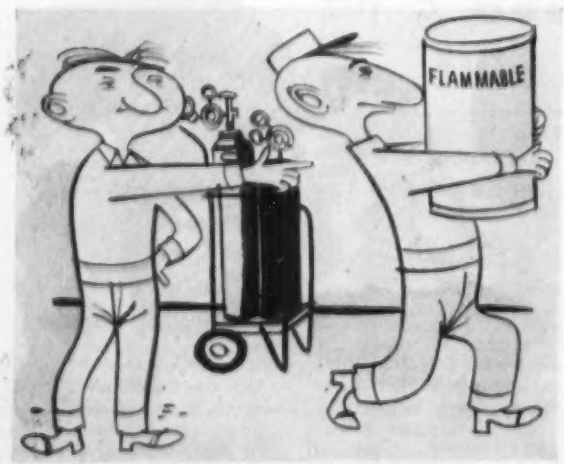
Avoiding Welding Fires

GREMLINS OR IMPS, or whatever creatures thrive on causing accidental welding fires, would have to desert your shop for more satisfactory quarters if definite safety precautions were made a part of your daily routine, thereby reducing the chances of the unexpected happening.

The Linde Air Products Co., in its publication, "Linde Tips," has described, with appropriate illustrations, a few of these safety recommendations which may serve as a check list for prevention of fires of this type and a means of increasing general efficiency among workers. These suggestions follow:

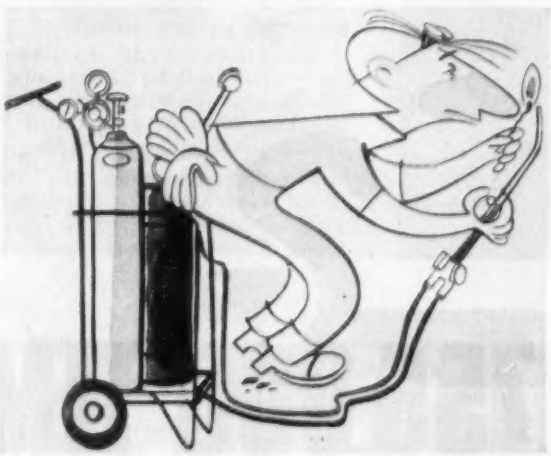
Caution First

In production, the material used and the type of welding done are the same on each piece of work. Therefore, if you take the necessary precautions for the first unit, you can work safely until the production of that particular unit is completed.



Taking safety precautions for repair and installation work is very much different. The material, type of weld, and the location of the work may vary greatly with each job. You may be repairing a gear on the side of a machine now, and next you may be welding sections of a heating system. This means you have to set up different safeguards for each individual repair and installation job you do. Before starting work, check with the foreman to make sure that there are no flammable materials or other hazards around, and that no one intends moving any there after you have started working.

When you are ready to start working check your equipment before lighting the blowpipe. Be sure all connections are tight and that gas pressure is correct. Never use a greater pressure than is required, because you think you can work faster—you can't! Too much pressure will only waste oxygen and acetylene, and increase the danger of fire by expanding the range and number of sparks.



The Flame

The oxyacetylene flame like any flame or fire can be as destructive as it is constructive if not used as it is intended. For this reason, you can never be too careful when working with a blowpipe. Always protect wood beams, flooring, partitions, and painted surfaces from the blowpipe flame with sheet metal or asbestos guards.

Wear gloves and protective clothing to cover your body, because a burn from an oxyacetylene flame or a hot spark can be very serious. Don't use matches to light your blowpipe; keep a flint lighter with the apparatus.

Flying Sparks

Unlike flame, the effects of which are confined to the immediate area of the work, sparks travel fast and far. A good, fat spark can travel more than 30 ft, and hold its heat several seconds after landing.

(Continued on page 150)

HOW TO GET MORE WORK FROM A USED TRACTOR

Hystaway working on Ohio Turnpike Construction

Hystaway® On a Used Tractor Gives You a Low-Cost, Mobile Excavator That Pays Off On Road Construction and Maintenance

Mount a Hystaway on a used (or new) tractor and you get a highly productive, low-cost, excavator-crane that moves at full tractor speeds, and is able to travel unassisted over long stretches of rough terrain.

Culvert, catch basin and footing excavation, ditching, pioneer work, structural crane work are just a few of the many jobs that make Hystaway an investment that pays its own way on road jobs.

Full tractor mobility makes possible fast moves from one part of the job to another. The exclusive Hystaway equalizer beam assembly permits full track oscillation. You work anywhere crawler tractors can go.

Hystaway has more power than any other ½ yard revolving machine. This extra advantage provides ample lugging power to prevent hang-ups, stalling and excessive wear—and is also easier on the operator.

With Hystaway you **dig and bulldoze with one machine.** There is "no tail swing" so you can work in tunnels, close to the slope of fills, close to the roadway without blocking traffic, and from other digging positions that would be extremely difficult for full-revolving machines.

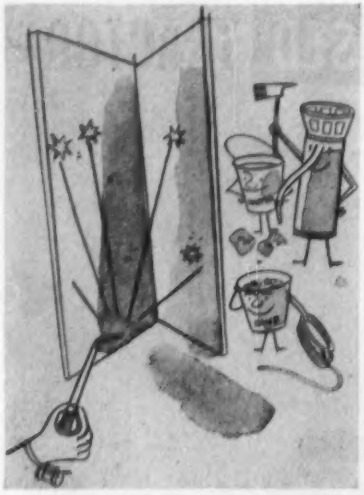
Hystaway is designed for fast mounting, and demounting, on Caterpillar D6, D7 or D8 Tractors.

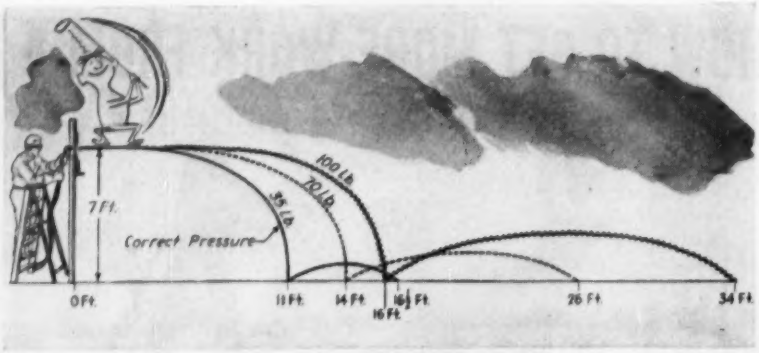
Your Caterpillar-Hyster Dealer will be glad to give complete details, or write for literature to Hyster Company, Tractor Equipment Division, 2921 N. E. Clackamas, Portland, Oregon; 1821 N. Adams St., Peoria 1, Ill.

HYSTER COMPANY

"Matched Design" Tractor Tools for Caterpillar-built Tractors

HYSTER





Sparks can lodge themselves in cracks and can start smoldering fires which may not break out into flames until after you have left the area. Never weld where sparks may come into contact with flammable vapors, liquids, or material. Sweep floors clean, and if they're wood, wet them down before you light the blowpipe. Never give sparks the benefit of the doubt. If there is a possibility that they might pass through cracks in walls or floors, cover the holes or move the work.

Three Spark-Control Hints

1. If you can move your work, set it up in an area that is free from flammable materials.

2. If you can't move the work, move the inflammable material or source of danger.

3. If neither can be moved, use guards to keep sparks close within the area of your work. Set pans of water or sand where they will catch dripping slag and pieces of hot metal that might fall.

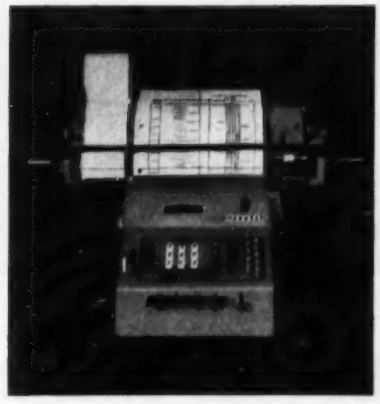
After you set up sheet metal or asbestos guards, have someone check to see if sparks are flying over or around them. When you change the direction of flame toward the work, the direction and range of sparks may change, too.

Make every effort to prevent fires, but be prepared to put them out if they start in spite of your precautions. Don't bury fire-fighting equipment in corners or let it run dry. Keep extinguishers, sand or water near each job so it can be used quickly if it's needed.

to builders and building suppliers:

The Olivetti Printing Calculator cuts overhead costs by making all figure-work quick, easy, and automatic. The printed tape record can be quickly verified for accurate entry; attached to invoices, payrolls, lumber tallies and other papers; filed; shown to suppliers and customers. Multiplication and division are completely and uniquely automatic. Costs less than, but does the work of, 2 separate machines: a calculator and a fast 10-key adding machine with direct subtraction.

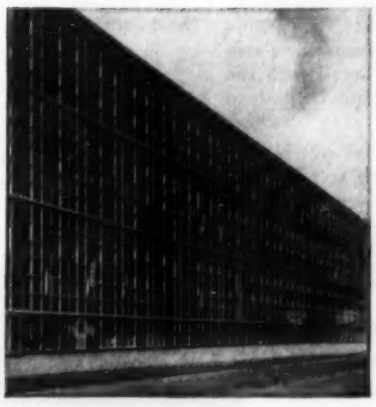
these calculators can help cut your overhead



The Olivetti Automatic Carriage Printing Calculator provides mechanized bookkeeping. It automatically calculates, and prints desired figures on record-forms, automatically moving to the proper columns. It can perform 21 separate operations automatically, in desired sequence; the sequence can be quickly changed. Its platen splits to take a 3-inch tape; it then operates exactly like the Olivetti Printing Calculator (above).

olivetti

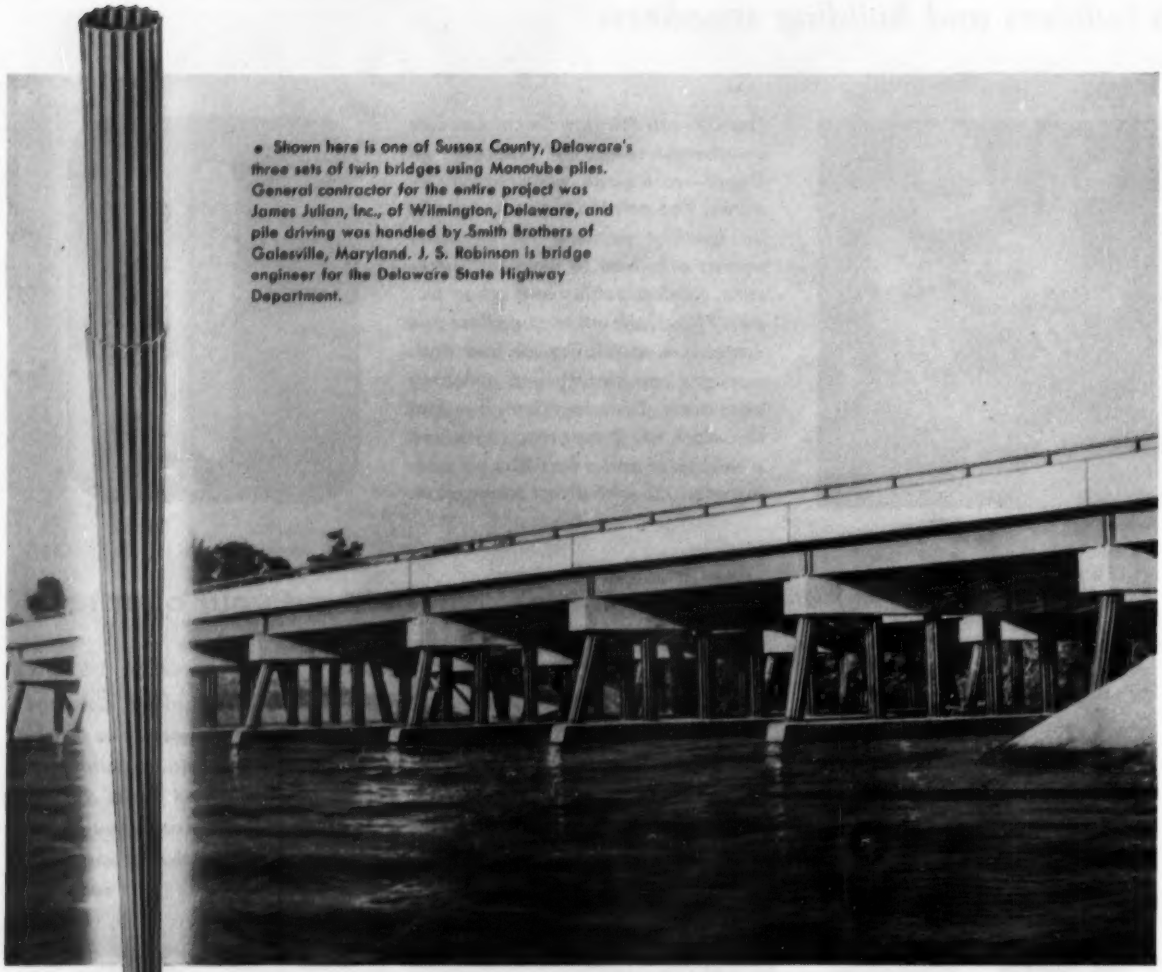
The Olivetti Printing Calculator, proved thoroughly dependable in 7 years of commercial use, has a lower cost maintenance contract than any comparable machine. More than 20,000 are on the job in the United States today. They are sold and serviced by 450 Olivetti dealers in every state of the Union, and by Olivetti branch offices; immediate delivery. No spare part is ever more than 24 hours away from any Olivetti dealer. Some of America's great corporations have specified "Olivetti". Why don't *you* investigate work-saving Olivetti machines? Send the coupon.



Olivetti Corporation of America
Dept. DO
580 Fifth Avenue
New York 36, New York

Gentlemen: I'd like to know more about the Olivetti Printing Calculator ( ), the Olivetti Automatic Carriage Printing Calculator ( ), and how they can help cut my overhead. Without obligating me in any way, please let me have this information as soon as possible.

Name.....
Title.....
Company.....
Street.....
City..... State.....



• Shown here is one of Sussex County, Delaware's three sets of twin bridges using Monotube piles. General contractor for the entire project was James Julian, Inc., of Wilmington, Delaware, and pile driving was handled by Smith Brothers of Galesville, Maryland. J. S. Robinson is bridge engineer for the Delaware State Highway Department.

Monotube Piles offer dual economy for Twin Delaware Bridges

LOOK how tapered, fluted Monotube steel piles are used both as rugged foundation piles and as unsupported trestle columns for these twin bridges over Delaware's Nanticoke River. This construction takes advantage of Monotube's versatility . . . and saves plenty compared with the alternate method requiring concrete piers built in cofferdams.

Monotube piles have other advantages too. They're cold-rolled for added strength, save time and money because of easy on-the-job extension welding, cut-offs are quick and easy, no need for special rigs or heavy driving equipment, and there's top-to-bottom visual inspection before concreting.

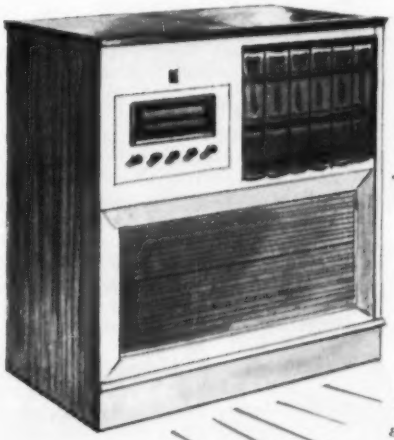
These important features explain why so many experienced contractors and engineers prefer Monotube piles for foundation jobs of every description. Write today to The Union Metal Manufacturing Company, Canton 5, Ohio, for your copy of Catalog No. 81.

Monotube Foundation Piles

UNION METAL

Hear What They Say

SUCCESSFUL FLEET OPERATORS ENDORSE PHILLIPS *66* HEAVY DUTY MOTOR OILS!



"Our construction company operates 18 kinds of Caterpillar Diesel units and 40 Ford Trucks. We've been using Phillips *66* Heavy Duty Motor Oils ever since 1941. We have no excessive oil consumption, carbon or sludge. And if you could take a look at our engines at overhaul, you'd find they are remarkably clean."

"I operate a fleet of 25 taxicabs. Been using Phillips *66* Heavy Duty Motor Oils nearly seven years. We haven't had any valve or bearing trouble since changing to Phillips *66*, and we get top performance for at least 125,000 miles with no repairs."

"My freight transportation company operates 80 Diesel tractors and 173 trailers. We've been using Phillips *66* Heavy Duty Motor Oils since 1946. We get very little sludge or wear, and our engines are remarkably clean at overhaul."

"I'm maintenance superintendent of a bus company operating over 40 city buses. Since changing to Phillips *66* Heavy Duty Motor Oils, we've kept our engines cleaner; engine life has increased considerably; we have greatly reduced over-all maintenance costs."

"I'm Operating Manager of a cartage company. We operate 56 over-the-road tractor units and 55 city pick-ups. We've been using Phillips *66* Heavy Duty Motor Oils for nearly five years. I can report minimum wear; negligible sludge and varnish; no trouble with bearings; no fouling; and oil consumption of 128 miles per quart, including oil changes every 2,000 miles."

"I operate a taxicab fleet in Illinois. Our engines used to be just too dirty when we took them down. Since changing to Phillips *66* Heavy Duty Motor Oils, our engines are cleaner and we don't get as much low-temperature sludge. Overhaul has been stretched out to between 85,000 and 125,000 miles. Phillips *66* is the best oil I've used. It helps cut our maintenance costs and gives us more efficient use of our cabs."

Test Phillips *66* Heavy Duty Motor Oils against the oil you are now using. A Phillips 66 Lubrication Engineer will be glad to help you set up a test. Write to: Sales Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Oil for the Engines of Commerce

Phillips 66

PHILLIPS *66* HEAVY DUTY MOTOR OILS

SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Baldwin-Lima-Hamilton Corp.: Construction Equipment Div. announces appointment of Kentucky Equipment Co., Inc., Louisville, Ky., as distributor for Lima shovels, cranes, draglines and pull shovels, covering all of Kentucky, excepting three extreme northern counties and three southeastern counties. Other appointments are: R. C. Larkin Co., Chicago, Ill., and Industrial Tractor & Equipment Co., Inc., Nashville, Tenn. The Larkin Co., covering northern and central Illinois, will handle Lima power shovels, cranes, draglines, pull shovels and Austin-Western power graders, rock crushers, rollers, scrapers, hydraulic cranes and Badger shovels. Industrial Tractor will handle the Lima line of power shovels, cranes, draglines and pull shovels in central Tennessee.

Euclid Div., General Motors Corp.: George M. Philpott Equipment Co., dealer for Euclid and other construction equipment in California, has opened a new branch office at 2376 S. Railroad Ave. in Fresno, Calif. Philpott also has a branch office in Monrovia, Calif. A second appointment is Euclid-Tennessee, Inc., Nashville, for middle Tennessee. In addition to Euclid scrapers, rear-dump and bottom-dump hauling units, and loaders, the new dealership will handle Bucyrus-Erie, Cedar Rapids and Chicago Pneumatic equipment. General Motors diesels used in "Eucs" will also be sold and serviced.

Schield Bantam Co.: Missouri-Illinois Tractor & Equipment Co., Inc., St. Louis, Mo., with a branch in Charleston, Mo., has been appointed this company's exclusive distributor for eastern Missouri and southern Illinois and will sell and service the complete line of truck- and crawler-mounted ⅜-yd power cranes and excavators, including the Bantam line of all-new and remanufactured crane carriers and trucks. Another new distributor for this company is Cook Brothers Equipment Co., Los Angeles, Calif., which will service all of Southern California except San Diego and Imperial counties.

Chain Belt Co.: Announces the appointment of Spreitzer Inc., Cedar Rapids, Iowa, as exclusive distributor of Rex Construction Machinery in the following counties of Iowa: Black Hawk, Buchanan, Delaware, Tama, Benton, Linn, Jones, Poweshiek, Iowa, Johnson, Cedar, Keokuk, Washington, Wapello, Jefferson, Henry, Davis and Van Buren. Also announced is the appointment of Gibbs-Cook Equipment Co., Des Moines, Iowa, as exclusive distributor of Rex Construction Machinery in the central and northern portion of Iowa, and Stockberger Machinery Inc., Fort Wayne, Ind. with branch offices in Indianapolis and South Bend, Ind. Chain Belt line includes Rex Moto-Mixers, Rex Speed-Primer pumps, building mixers, plaster and mortar mixers, pavers, and Rex Pumpcrete.

Cleco Pneumatic Tool Div., Reed Roller Bit Co.: Has just announced the appointment of Safeway Scaffolds Co., Houston, Tex., as distributor for Cleco backfill tampers, paving breakers, sump pumps, and handi-drills in that area.

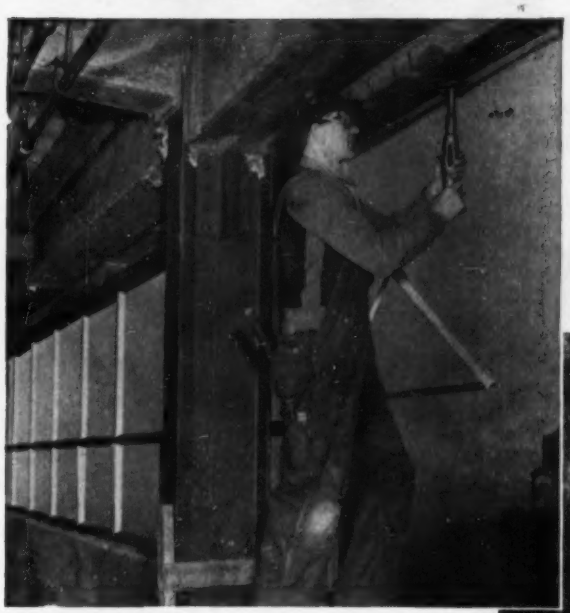
Huber Manufacturing Co.: Announces appointment of the Santa Fe Equipment Co., Inc., an affiliate of Electric Tool & Supply Co., Inc., of Los Angeles as distributor in southern California for its complete line of 3-wheel and tandem rollers,

(Continued on page 158)

a *NEW WAY* to fasten metal to wood or concrete!

with

DRIVE-IT



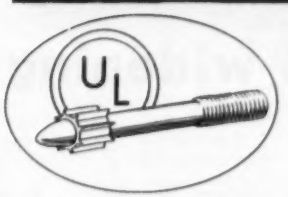
Over 6000 Drive pins were used to install aluminum window frames to structural steel and concrete walls of the new Jefferson Hospital extension in Philadelphia, Pennsylvania.

Architect: Vincent Kling. *Contractor:* Wark & Co.
Drive-It Tools: F. H. Sparks and Co.

NEW EXCLUSIVE

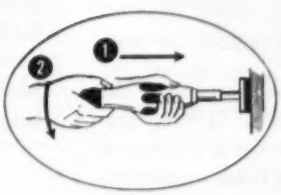
DRIVE-IT 320
WITH
BREAK-OPEN ACTION

Snap open action results in the fastest operating tool on the market. Easiest method to load and eject cartridges under any condition.



Drive pins are Underwriters' Laboratories approved.

Controlled Power. First and only tool which requires but one standard power load regardless of penetration desired. No need to buy and stock various strength power loads.



Three-way Safety. Cannot be discharged accidentally, due to the push and turn firing sequence. This, plus the large, swivel safety pad, makes DRIVE-IT triple safe.

More fastenings per hour with this speedy way of loading and ejecting cartridges.

SEND THIS COUPON FOR FULL DETAILS

POWDER POWER TOOL CORP.
Dept. I, 7526 S.W. Macadam Ave., Portland 1, Ore.
Canada: Ammo Power Tool Co., Ltd.
735 Broadway, Vancouver, B. C.

☐ Please send FREE catalogue and literature.
☐ I want a FREE demonstration of *DRIVE-IT*.

Name_____
Street_____
City_____ State_____

DRIVE-IT
the original **POWDER-ACTUATED TOOL**

Push-loaded by 175 hp tractor, "C" heaps 11 to 13 pay yards in 40 to 45 seconds.

Average 3,612 pay yards daily... finish U. S. 66 widening ahead of schedule

ORR CONSTRUCTION COMPANY, Chicago Heights, widening 9 miles of U.S. 66 south of Lincoln, Illinois, had to move 220,000 yards of clay, topsoil and mud in 72 days. To meet this schedule, Orr brought in 6 C Tournapulls, three crawler-pans along with supplementary pushers and patrols. Conditions ranged from good to poor. On one part of the job, the "C's" hauled from a borrow located on quicksand where the water table was only 2′ underground. Much of the dirt was taken across the highway through open traffic controlled by flagmen. Also, haul lengths frequently reached 1¼ miles one-way.

Timekeeper's records covering all these phases show the Tournapulls worked continually at 90% to 95% mechanical efficiency. Work included cutting a number of access roads through muddy ditches and fields to scattered off-road borrow pits.

2400′ cycle in 5 minutes

At point where time studies were taken, despite poor footing, the "C's" built a typical 600′ road and cross-highway ramp in about 2 hours. Then they went to work loading from the pit.

Average load from this pit was 11½ pay yards. Haul was made up ramp, across traffic, down another ramp to fill 1100′ away. Each rig made 11 cycles per 55-minute hour. Output for the fleet of 6 Tournapulls totaled 759 pay yards per hour. This high rate helped balance time lost due to heavy rains. As a result, Orr finished well ahead of schedule.

Said Foreman LaVaun B. Jensen, "Tournapulls worked out fine. Despite tough conditions we had very few breakdowns. The automatic power-transfer differential helped rigs pull easily through muddy soft spots."

"C Tournapull is the best . . ."

Operator C. W. Brown said, "I've run equipment all the way from Guam to Africa, and this C Tournapull is the best that I've run."

High speed belongs on your jobs, too. Phone for a Tournapull demonstration and prove it pays off for you!

Tournapulls haul 11 to 12-yard loads up ramp from borrow across highway. Motor patrol kept roads in shape for high haul speeds.

Four-wheel air brakes (3,763 square inches braking surface) and fingertip electric controls provide safety for travel in traffic.

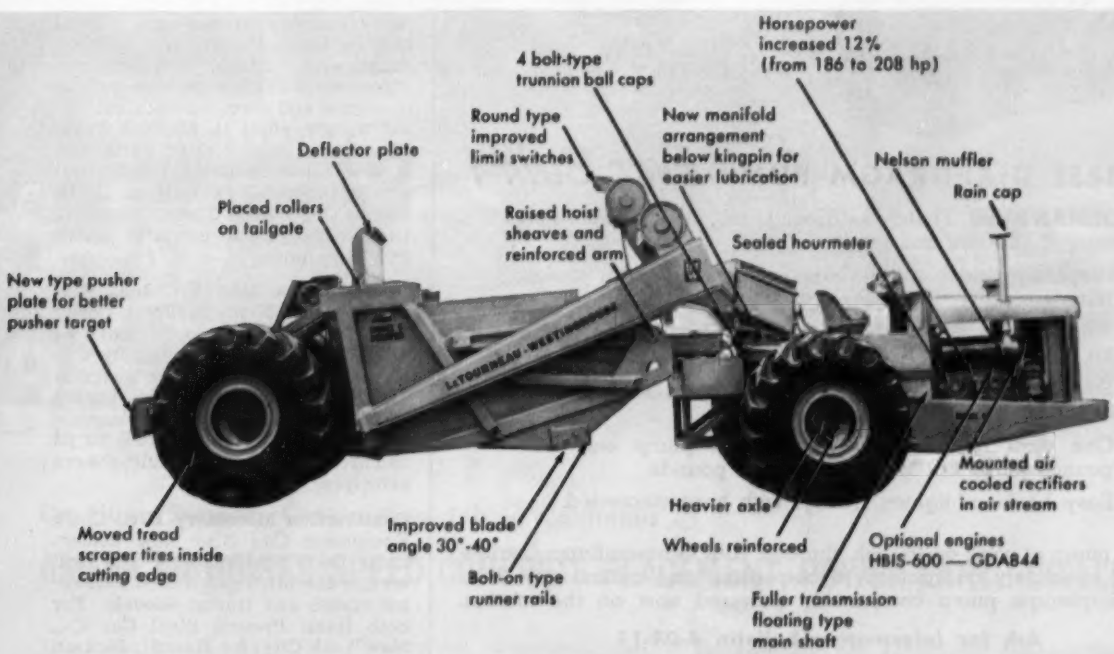
Load Count for 20 Typical Days

EQUIPMENT: 6 TOURNAPULLS (90%) 3 CRAWLER-SCRAPERS (10%)

	1st week	2nd week	3rd week	4th week
MONDAY	495 loads	402 loads	130 loads (following rain)	205 loads
TUESDAY	637	393	256	290
WEDNESDAY	549	357	202	206
THURSDAY	564	330	73	6,285 loads total @ 11½ pay yard average
FRIDAY	363	—RAIN—	40 (following rain)	
SATURDAY	273	200	320 (crawlers left job)	72,277½ pay yards moved

Timekeeper's log shows 6 C Tournapulls averaged 3,612 pay yards daily. Production of third week was hampered by 2 days of rain. During fourth week, haul lengths were substantially increased.

Spreading mud, Tournapull's exclusive power-proportioning differential delivers up to 4 times drive power to wheel on firmest ground. Big 21.00 x 25 low-pressure tires provide necessary flotation and traction.



Important improvements made recently on the C Tournapull

Since Westinghouse Air Brake Co. formed the new LeTourneau-Westinghouse Co., many machine improvements have been made. Among them are these shown on the current C Tournapull. Despite greater cost of these improved parts, changes have not raised sale price of the "C"

Tournapull—Trademark Reg. U.S. Pat. Off. P-541-H

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

SALES AND SERVICE . . .

Continued from page 154

the Huber maintainer and motor grader. In addition to its main headquarters in Los Angeles, Santa Fe Equipment also has branch headquarters at San Bernardino, Calif.

Koehring Co.: The Florida Equipment Co. has been appointed exclusive distributor to handle the complete Koehring line of heavy-duty construction equipment in Florida. The new appointee also will handle products manufactured by the Parsons Co., of Newton, Iowa, and Kwik-Mix Co., of Port Washington, Wis., subsidiaries of the Koehring Co.

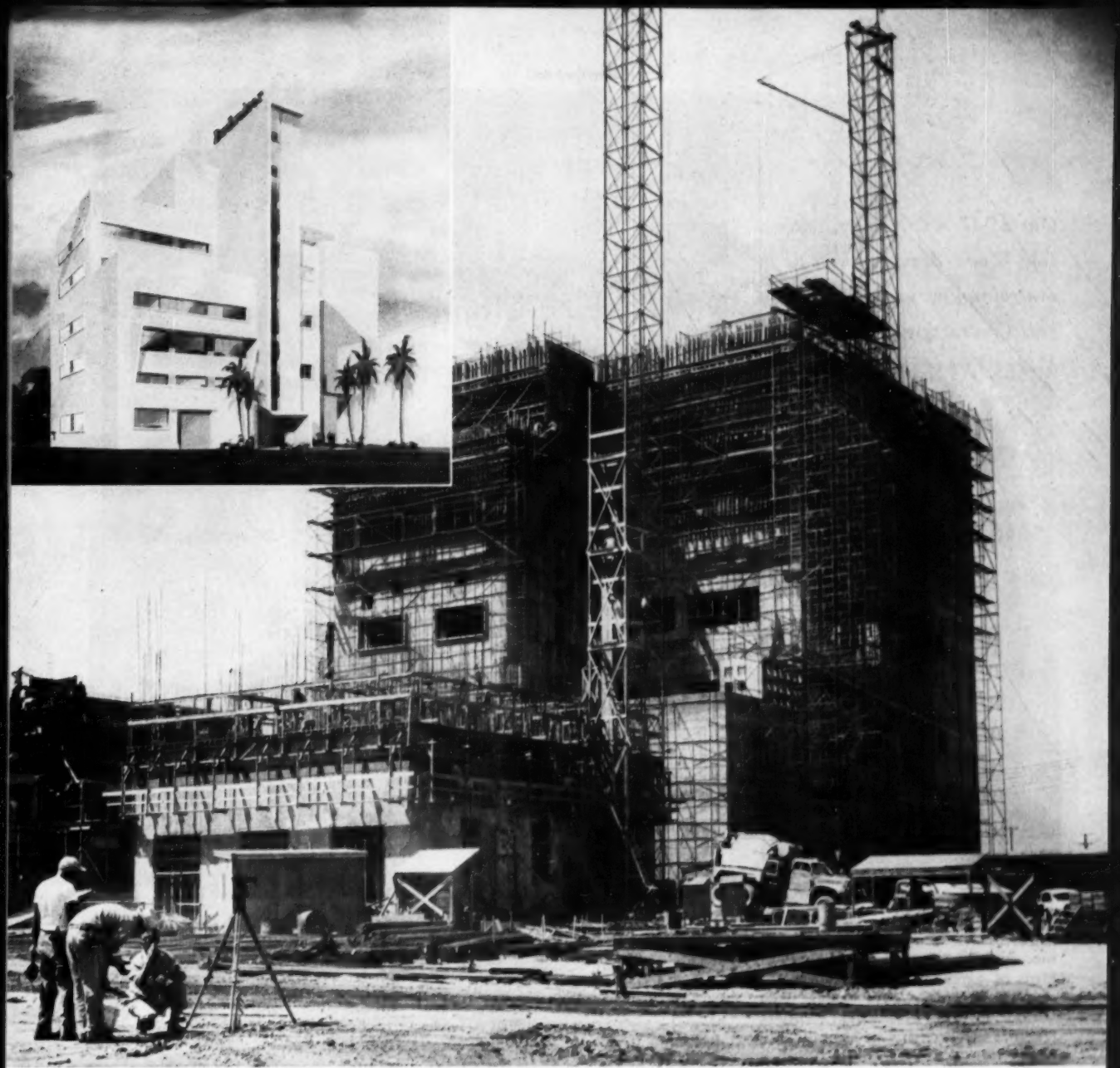
Simplex Forms System, Inc.: F&P Simplex Sales Co., Westchester, Ill., has been appointed distributor for Chicago and suburbs of Simplex forms for concrete foundations. F&P will stock forms and tie wires to supply the Chicago market.

International Harvester Co.: Appointment of Howell Tractor and Equipment Co., Chicago, as northern Illinois and northwestern Indiana distributors for International industrial power products has been announced. Howell will represent International industrial power products in 17 counties in northern Illinois and in Lake, Porter, and LaPorte counties of Indiana. The company plans considerable expansion both in personnel and plant facilities, including a new plant in Melrose Park, Ill., to take care of sales, parts, and service for International industrial power products, as well as J. D. Adams Co., Wayne Crane, Schramm, and Ready Power products which they distribute.

George Haiss Mfg. Co., Inc., subsidiary of Pettibone Mulliken Corp.: Announces the appointment of Southern Machinery & Supply Co., Roanoke, Va., as exclusive distributor for the Haiss clamshell bucket line in Virginia. Haiss buckets come in sizes ranging from ¼ to 2½ cu yd and are operated on the multi-sheave principle.

Construction Machinery Div., Clark Equipment Co.: Nine new dealers have been appointed to sell and service the Michigan line of excavator cranes and tractor shovels. For both lines: Pressed Steel Car Co., New York City, for Hawaii; Jackson Machinery Co., Inc., New Orleans, for Louisiana; Contractors Service, Inc., Charlotte, for North Carolina; Spreitzer, Inc., Cedar Rapids, for eastern Iowa, J. J. Turner, Inc., Cleveland, for eastern Ohio; and J. C. George Construction Equipment, Inc., Syracuse, for upper central New York. Cunningham-Ortmayer Co., Milwaukee, Wis., has had its territory enlarged to include the Upper Peninsula of Michigan. For Michigan trac-

(Continued on page 162)



On Huge Brewery Construction Job in California . . .

AMERICAN HOISTS SPEED CONCRETE PLACEMENT, POWER EARTH DRILLING RIGS

Construction of one unit, inset, of the handsome new $20,000,000 Anheuser-Busch plant in California's San Fernando Valley posed several problems for engineers and contractors. High-speed concrete placement from the 185-foot towers, shown above, was a "must." This was handled quickly and accurately by industry's most modern hoist—a powerful American 2-drum Hoist.

To support footing loads of up to 300-pounds per square foot, clusters of friction piles were drilled in place. Telescoping concrete tremies controlled the concrete as it was poured. The supporting units averaged 50 feet in depth. Versatile American Hoists were selected to operate the earth drills.

Ingenious planning, coupled with powerful, modern equipment, have helped record another successful venture in modern construction annals. For factual, helpful information on the American Hoist line of construction equipment, see your American distributor, or write American Hoist and Derrick Co., St. Paul 1, Minn.

(Advertisement)

100-1-10

One of 17 A-C tractors, with Gar Wood dozers and cable control units, used by Yonkers Contracting Co. on their Maine Turnpike Contract.

Dozing on the Turnpikes from Maine to Ohio!

S. J. Groves & Sons Co. rip into tough going with Gar Wood equipped HD-20 on Ohio Turnpike contract.

Work on the big, new superhighways is in high gear this summer with contractors moving mountains of earth on projects throughout the country. As usual Gar-Wood dozers on Allis-Chalmers tractors fitted with Gar Wood cable control units, are handling a big share of the earthmoving on these major construction jobs.

Up in Maine, work is progressing on the second section of the Maine Turnpike — another high - speed, four lane divided highway running from Portland to Augusta.

On a contract for grading and draining an 11 mile stretch outside the twin cities of Lewiston-Auburn, Yonkers Contracting Co. is using 15 big Allis-Chalmers HD-20s and 2 HD-15s, *all Gar Wood equipped*, for stripping and spreading fill on the job. Over 3,000,000 yds. of dirt and 100,000 yds. of rock are involved in the contract.

In the photo at top, Yonkers Contracting Co. uses one of their 17 tractors, with Gar Wood dozers and cable control units, to spread fill for compaction by a sheepsfoot roller pulled by the same tractor.

Moving westward, contractors on New Jersey's tremendous new Garden State Parkway, from Cape May to the New York state line—and on the 500 mile New York Thruway, are using fleets of Gar Wood equipped Allis-Chalmers tractors in an effort to rush completion of the majority of the work by the end of the current working season.

In Pennsylvania preliminary work on extensions to the Pennsylvania Turnpike is underway and digging and dozing is swiftly progressing along the entire length of Ohio's big, new $283 million Turnpike.

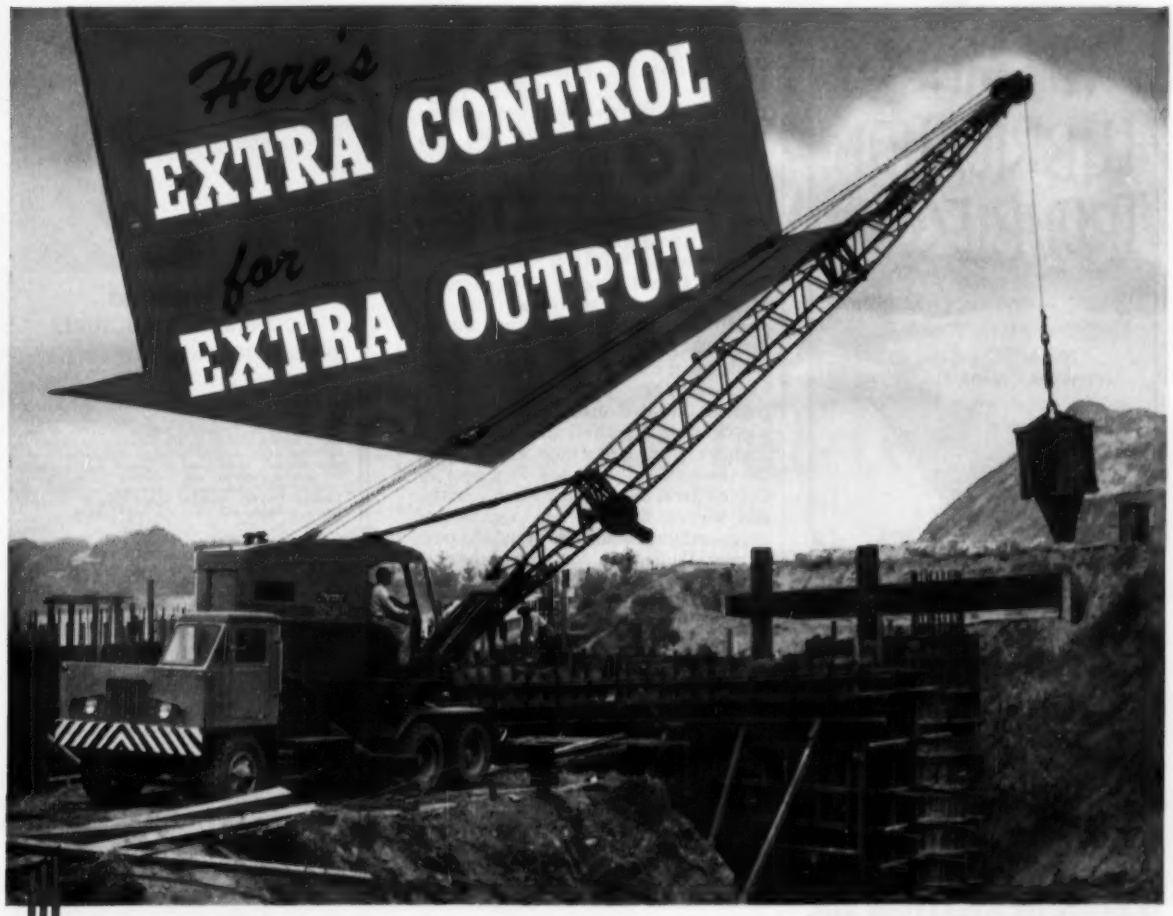
In the photo at left, S. J. Groves & Sons Co. use one of their many Allis-Chalmers HD-20s, equipped with Gar Wood dozer and cable control unit, to rip into sandy clay, clogged with tree and shrub roots, along the right-of-way of their 12.9 mile, 1,750,000 cu. yd. contract. Groves is only one of the many contractors using Gar Wood equipment on these vital toll road links between the Atlantic Seaboard and Chicago.

When there is earthmoving to be done, contractors everywhere specify Gar Wood! 15 dozer models, designed for both cable and hydraulic operation, are available for all Allis-Chalmers crawler tractors. Gar Wood's dozer line is supplemented by a complete line of front and rear mounted cable control units for any dozer-scraper operation.

GAR WOOD INDUSTRIES, INC.

TRACTOR EQUIPMENT SALES • WAYNE, MICHIGAN

M-4029 N



EXCEPTIONALLY SMOOTH accurate control —plus ready mobility—make the 15-B and 22-B Transit Cranes real producers on construction jobs. Here are some of the control advantages that pay off in big output.

BOOM CONTROL IS ACCURATE, RELIABLE with fully independent power boom hoist and power controlled load lowering on the main hoist line.

BOOMS ARE EASY TO SPOT because friction swing brake, in addition to regular swing lock, holds boom exactly where operator wants it.

QUICK, EXACT CONTROL RESPONSES are delivered by direct-connected mechanical controls. Elimination of all excess weight and excellent machine balance mean fast, smooth swing.

SPECIAL 16-PART SUSPENSION provides slower boom hoisting or lowering for even greater precision in setting steel, etc.

See your Bucyrus-Erie distributor now for full information on the 15-ton capacity 15-B Transit Crane, convertible to ½-yard excavator service; and the 22-B Transit Crane, outstanding in the 25-ton capacity, ¾-yard class.

68E54C

BUCYRUS ERIE

South Milwaukee, Wisconsin

SALES AND SERVICE . . .

Continued from page 158

tor shovels only are Midwest Equipment Co., Fargo, for eastern North Dakota and northwestern Minnesota; and Midwest Equipment Co., Bismarck, for western North Dakota and northeastern Montana. Appointed to handle Michigan excavator cranes only is Field Machinery Co., Cambridge, for eastern Massachusetts.

Detroit Diesel Engine Div., General Motors Corp.: Announces the appointment of the Columbus Equipment Co., of Columbus, Ohio, as industrial distributor for GM Diesel engines. The company has also appointed Reid-Holcomb Co., Inc., as distributors for their products in Indianapolis; the Service and Supply Division of Lake Shore Engineering Co. of Iron Mountain, Mich., which has served the mining, logging and construction industries in Michigan's Upper Peninsula for more than 90 yr.; the Cunningham-Ortmayer Co., of Milwaukee, Wis., and the T. E. Potts Equipment Co. of Buffalo, N. Y.

On the Sales Front

American Tractor Corp.: Has appointed two new regional sales managers to service factory distributors and local TerraTrac dealers in the Midwest and the West Coast. George A. W. Bell, Jr., recently of Billings, Mont. is the new western regional manager with headquarters in San Francisco. Robert G. McMaster, is Midwest regional manager and will work out of Monmouth, Ill.

Leschen Wire Rope Div., H. K. Porter Co., Inc.: Appointment of G. F. Ryan as sales manager of the New York District has been announced. Mr. Ryan will be in charge of Leschen sales activities in New York, New England, New Jersey, Maryland and Eastern Pennsylvania.

Sherman Products, Inc.: Robert W. Humes, advertising and sales promotion manager, has been promoted to assistant sales manager.

Le Roi Div., Westinghouse Air Brake Co.: Don S. Permar has been named to the newly created post of field sales manager with over-all responsibility in managing the Le Roi field sales organization.

Valley Equipment Corp.: Has recently appointed A. J. Morganroth as director of sales. This company specializes in bucket sales in New York, New Jersey and Connecticut.

Hercules Motors Corp.: A new factory branch has been opened at Jacksonville, Fla. to serve as a parts warehouse for Florida, Alabama, Georgia and South Carolina. John C. Poulton is branch manager.

(Continued on page 165)

NEW

INTERNATIONAL 60,000 GVW 6-WHEELER

With New 212 hp. Royal Red Diamond Engine

There's a new model in the INTERNATIONAL line of 6-wheelers — a model with the power to haul capacity loads over the roughest terrain — a model built to absorb severe loading shocks, and with ability to move heavy loads long distances over-the-road at maximum safe speeds.

The new RF-230 is powered by the new INTERNATIONAL 212 hp. Royal Red Diamond 501 engine delivering 444 lb-ft torque at 1600 rpm. It has hydraulic full-power steering, 12-volt electrical system, other features. Engine and all components are precisely coordinated to assure maximum operating economy, minimum maintenance and long life.

This newest INTERNATIONAL is Tough-Job engineered like all INTERNATIONALS — has a surpassing measure of the performance, strength and stamina qualities that have made INTERNATIONAL the 6-wheel sales leader for 20 straight years. It is built to do big jobs, save big money. Get full facts from your INTERNATIONAL Dealer or Branch.

QUICK FACTS...

GVW rating, 60,000 lbs.

Wheelbase, 175 inches; optional wheelbases available.

Engine, INTERNATIONAL Royal Red Diamond 501, 4½-inch bore, 5¼-inch stroke, 501 cu. in. displacement. Max. hp., 212 at 3000 rpm. Max. torque, 444 lb-ft at 1600 rpm.

Frame, double, heat-treated alloy steel. Two 15,000 lb. capacity front tow hooks, standard.

Clutch, 15-inch single plate with vibration damper.

Transmission, direct-in-fifth main plus overdrive auxiliary.

Standard equipment includes hydraulic full-power steering, air brakes, 12-volt electrical system.

Optional equipment includes LPG fuel system, Comfo-Vision space saver cab for maximum front axle loading; high altitude engine equipment; tinted safety glass all around.

INTERNATIONAL HARVESTER COMPANY · CHICAGO

International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

See the season's new TV hit, "The Halls of Ivy," with Ronald Colman and Benita Hume, Tuesdays, CBS-TV, 8:30 p.m., EST

INTERNATIONAL® TRUCKS

"Standard of the Highway"

SALES AND SERVICE . . .

Continued from page 162

DeWalt Inc.: Truman Jones formerly manager of the special sales division, has been named general sales manager. He will be permanently stationed at the firm's main plant in Lancaster, Pa.

The Heil Co.: Harlan Stoller, former export and government sales manager, is now director of government, export, and road machinery sales. He is responsible for the over-all direction of the department.

Cummins Engine Co.: H. A. Strohman, assistant regional manager, Eastern Region, has been transferred from New York City to the new Middle-Atlantic office at Harrisburg, Pa. He will act as Cummins representative in Pennsylvania, Maryland, Delaware, southern New Jersey, the western third of New York State and a portion of northern Virginia. Appointed to the position of regional manager, Mid-West District-Central Region, St. Louis, Mo. is M. W. Brooks who will serve as Cummins representative in the Kentucky, southern Illinois, Missouri, Iowa, northern Kansas, Nebraska and South Dakota areas.

The Galion Iron Works & Manufacturing Co.: Has appointed Daniel Penkoff as its southwestern district representative for motor graders and rollers. His territory includes California, Arizona, Nevada, Colorado, New Mexico and southwestern Texas.

Crucible Steel Co. of America: Announces the appointment of Robert M. Simpson as manager of the San Francisco sales branch. Mr. Simpson was assistant manager of the San Francisco branch.

Sika Chemical Corp.: Cornelius R. Barrett, resident engineer for the last three years on the huge Tappan Zee Bridge, has joined the sales staff of this company which manufactures concrete admixtures and joint-sealing compounds. He will represent the company in the New York City area.

Chain Belt Co.: Harold Lavin has been appointed eastern district manager for the Construction Machinery Div., with offices located in New York City. Also appointed as southwest district manager was John W. Smith, with offices at Houston, Tex.

Detroit Diesel Engine Div., General Motors Corp.: Has appointed Charles H. Stewart factory sales representative to serve GM Diesel distributors in the Dakotas, Minnesota, Nebraska, Iowa, Kansas and the western half of Missouri. He assumed his new duties in January.

Clark Equipment Co.: Russell L. McKinley has been appointed field service manager of the Construction Machinery Div. Mr. McKinley was formerly service manager for Browning Crane & Shovel Co., Cleveland.

Gar Wood Industries, Inc.: Has appointed A. F. Hoop manager of the Los Angeles direct factory truck equipment sales branch.

Worthington Corp.: William A. Meiter, central sales manager, has been promoted to general sales manager, succeeding Thomas J. Kehane who has been appointed vice-president in charge of sales.

Marion-Osgood-General: Establishment of a consolidated sales and service department for this entire line of equipment in both the domestic and export markets has been announced by the Marion Power Shovel Co. D. E. Rizor has been named to head the coordinated program as vice-president for sales and service. Kenneth E. Williamson, Marion-Osgood-General sales manager, small machines, is concentrating his activities on the sale of equipment in sizes of 4 cu yd and under through a U.S. and Canadian distributor organization. Richard M.

SALES AND SERVICE . . .
Continued

Bessom as export sales manager is in charge of sales of the complete line of machines through a worldwide organization of distributors abroad.

In the Main Office

DeWalt Inc.: Conde Hamlin has been elected executive vice-president of this American Machine & Foundry Co. subsidiary which is a major manufacturer of power cutting tools, including the famous DeWalt radial-arm saw.

Tousey Varnish Co.: The Board of Directors has elected Carl R. Heagstedt president, Bradford W. Alcorn vice-president and Harry D. Wright secretary of the company. Ralph F. Kendig remains treasurer.

Marion Power Shovel Co.: Milton T. Smith is the new vice-president and general manager. He was named to a similar post with the Osgood Co., a subsidiary of Marion Power Shovel Co., and was elected a director of both companies.

Special Mention

Leschen Wire Rope Div., H. K. Porter Co., Inc.: A move to quarters at 6424 E. Fleet St. in Los Angeles by this division has been announced. They will house both the warehouse and sales office and have ample space to store and handle the varied stock of Hercules Red-Strand wire rope for the Los Angeles area.

Caterpillar Tractor Co: Has established a new parts depot in Los Angeles to provide emergency overnight service to its distributors in southern California, southern Nevada and Arizona. James Busey has been named manager of the southern California depot. He will be assisted by Robert Webster.

Association Activities

American Road Builders' Assn: John N. Robertson, director of highways for the district of Columbia, is the new president. He succeeds Robert M. Reindollar, engineer consultant of Baltimore.

Power Crane & Shovel Assn.: Walter W. Walb, president and general manager of the American Steel Dredge Co. Inc., was elected president at the Association's annual meeting in Chicago. Mr. Walb succeeds Julian Steelman, president of the Koehring Co., Milwaukee, Wis. D. W. Lehti, president of the Link-Belt Speeder Corp., was elected vice-president of the Association.

Oliver "OC-12" with hydraulic 1-yd. loader. This model has the long track frame for added stability. Loader has exceptional bucket rotation and 10' 4" loading height.

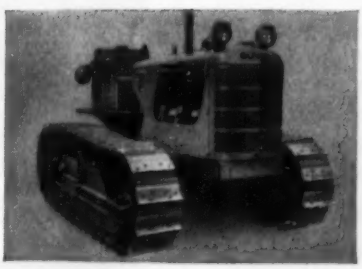
Another great tractor by Oliver ...THE POWERFUL "OC-12" CRAWLER!

It's a rugged, eager worker in the 45 drawbar h.p. class that features advancements in power, economy and operating ease to make every job more profitable.

The "OC-12" offers two engines of exceptional torque span—diesel or gasoline. Both engines have instant electric starting, pressure cooling, by-pass thermostat and full-flow oil system to insure quick starting and long, low-cost service.

The smooth lines of this unit show it is made for easy access and operator visibility. Controls are right where they're the handiest. Down to the key-lock switch, foam rubber seat, overhead-linkage clutch, this tractor caters to operator convenience.

Your Oliver Industrial Distributor will be glad to demonstrate the "OC-12." Give him a call.



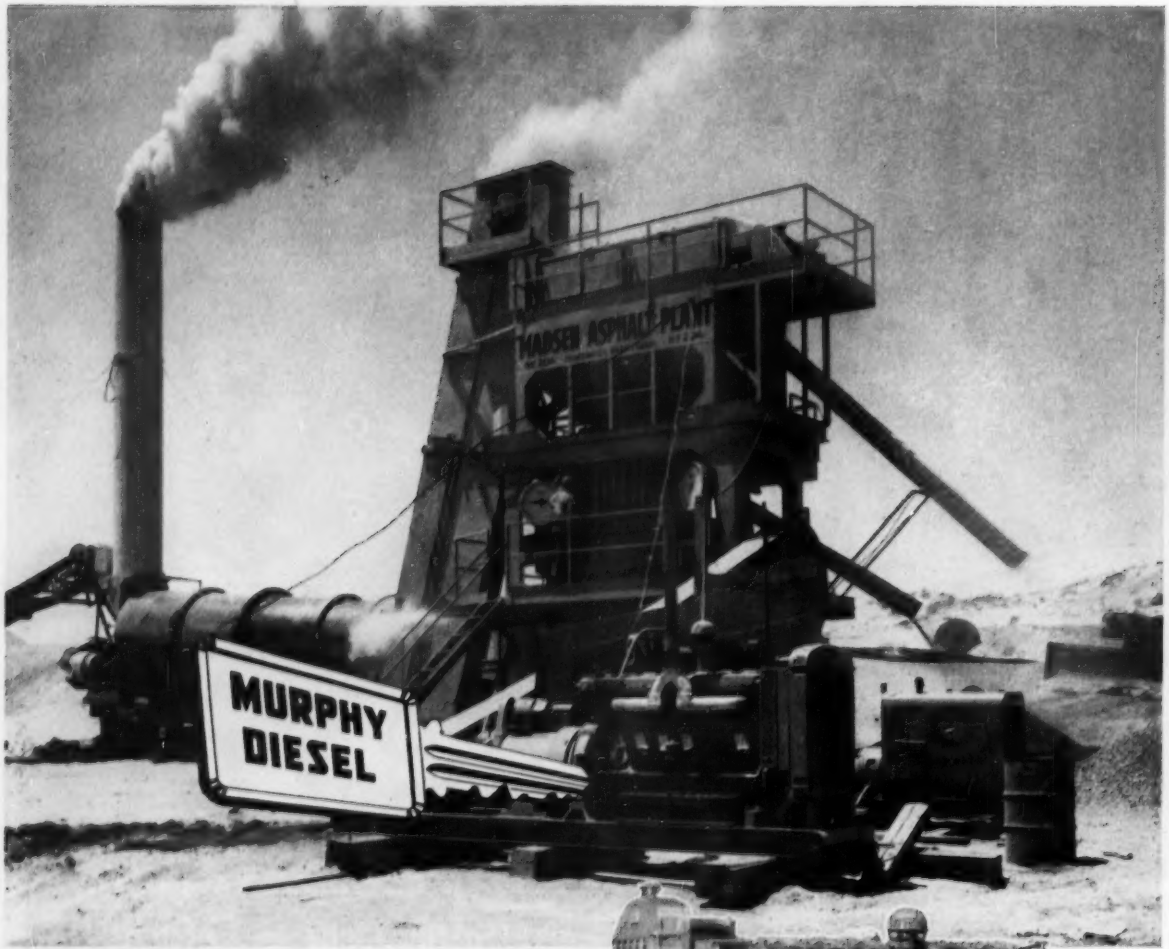
The "OC-12" is available in two track widths: 44- and 60-inch—and two track lengths, one with four lower track wheels and one with five. Standard grousers are 14-inch.

Here is the "OC-12" with hydraulic bulldozer. Hydraulic pump is front mounted. Special protective grille is part of 'dozer frame. Blade has provision for tilt adjustment.

THE OLIVER CORPORATION
400 W. Madison Street, Chicago 6, Illinois

OLIVER

a complete line of industrial wheel and crawler tractors



MURPHY DIESEL POWER

your key to more economical asphalt plant operation

There are a lot of factors that determine how profitable your asphalt operations will be. Some you can control—others you can't. But you can do something about power for your plant. You can use an engine that's dependable under all conditions, economical on fuel and maintenance, rugged and capable of delivering the kind of power you need. One engine fills this bill—the Murphy Diesel.

Murphy Diesel offers three types of power to best suit your needs—mechanical power units, electric generating sets and Mech-Elec Units which will supply both mechanical and electrical power separately or simultaneously. Ask your Murphy Diesel Dealer to give you complete information on the unit that will serve you best.

MURPHY DIESEL COMPANY
5339 W. Burnham St.
Milwaukee 14, Wisconsin
Sales, parts and service throughout the nation

311

Heavy duty power
for construction

Murphy Diesel Engines and Power Units for construction, 90 to 240 H.P. Generator Sets, 60 to 154 K.W.

FINANCIAL AID TO HIGHER EDUCATION

Business Aid for Our Colleges—Voluntary or Involuntary?

Previous editorials in this series have shown that:

- As a group the nation's independent, privately endowed colleges and universities are in grave financial trouble, and
- There are many different means by which business firms can extend a helping hand to these institutions.

This editorial, one of a series devoted to the financial problems of higher education, submits this proposition: **If business firms do not voluntarily go to the financial aid of higher education, there is every prospect that they will soon be providing more financial support for higher education involuntarily, through taxation.**

If this prospect materializes, one of the basic elements of a well-balanced system of higher education—a strong array of independent colleges and universities—may well be dangerously weakened if not destroyed. And in the process a potentially crucial bulwark for freedom of enterprise in the United States—that same strong array of independent colleges and universities—will be undermined.

Acceptance of these propositions implies absolutely no disparagement of tax-supported colleges and universities. These have an indispensable role in the total system of higher education in the United States. Leaders of these institutions would be among the first to agree that their position is strengthened by a strong system of independent institutions, supported privately rather than by political agencies.

What is the evidence that in one way or another, voluntarily or involuntarily, business will be giving more financial support to higher education? One impressive part of this evidence is provided by the recent rapid increase in the proportion of college and university students attending tax-supported institutions.

Rapid Shift in Enrollment

In the fall of 1952 tax-supported colleges and universities enrolled about 7.5 per cent more students than the independent institutions. In 1953 this percentage was doubled. And in 1954 the tax-supported institutions enrolled 26 per cent more students.

In the case of students entering college for the first time the relative growth of the tax-supported institutions recently has been even more striking. In 1952, the number of beginning students in the tax-supported schools, as reported by the U. S. Office of Education, exceeded those in the independent colleges and universities by 35 per cent. In 1954, just two years later, this figure jumped to 49 per cent.

Why has the proportion of students attending tax-supported colleges and universities been in-

creasing so rapidly? There are many reasons. But a dominant reason is that, in order to keep going at all, the independent institutions have been forced to make large increases in the prices they charge for instruction. The purchasing power of their endowment funds has been cut in half by price inflation. The capacity of the wealthy to supplement their endowments by gifts, as they have done in the past, has been greatly reduced by high taxes. As a result these schools have been forced to rely increasingly on higher prices for instruction (tuition as it is called in academic circles) to make both ends meet.

Since 1940, the independent colleges and universities have raised their tuition fees by an average of about 60 per cent. This is considerably less than the increase of about 100 per cent in prices generally since 1940. And it is nowhere near enough to prevent the faculty members of the independent colleges from faring miserably in terms of salaries, a matter of major national importance to which we shall return in this series. But the increase in tuition fees of the independent colleges has been much greater than the increase in the fees charged by the tax-supported schools. And that price differential increasingly tends to shunt students into the schools which are supported chiefly by taxes. Independent colleges now charge, on the average, about $580 per year for a full course of instruction while the tax-supported institutions charge, on the average, about $240.

Bigger Tax Bill in Prospect

A large increase in the total enrollment in our colleges and universities during the next decade is in prospect, particularly when the great increase in births during World War II is reflected in the number of young men and women of college age. With a total of 2.5 million students at present enrolled in our institutions of higher learning, it is estimated that the total will be over 3 million by 1960.

If this trend continues most of the anticipated increase in college and university enrollment will be concentrated in tax-supported institutions. Indeed, if the shift toward tax-supported institutions that has occurred in the last three years were to continue over the next six years at the same rate, about two million of the three million students anticipated in 1960 would be in tax-supported colleges and universities and one million in independent schools. In 1950 there was a 50-50 division in enrollment. This shift would mean, of course, a corresponding increase in the tax bill for tax-supported education. And of this bill, we can be sure that an ample share would be assessed against business firms.

No Easy Solution

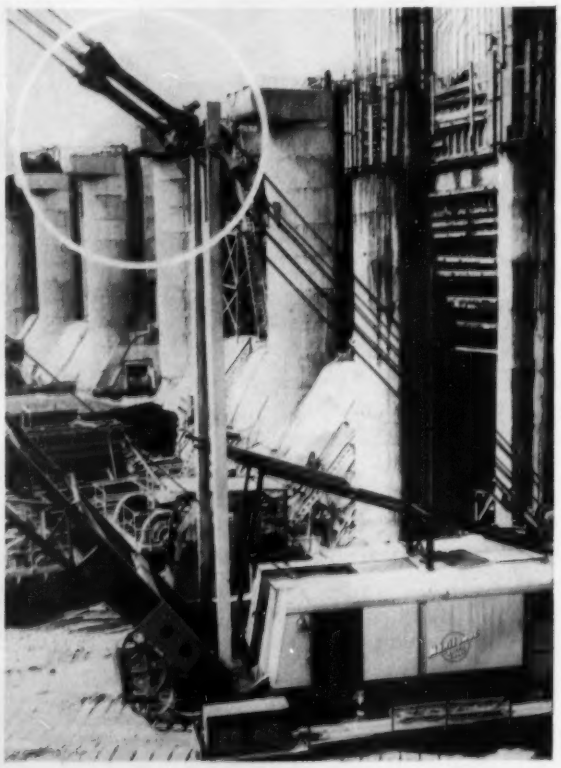
The best way, of course, to put a brake on a soaring tax bill for higher education is to help the independent institutions get in shape financially to carry a larger share of the student load. For most companies the development of a mutually satisfactory program of financial aid for higher education is a complicated process. In fact, it is so complicated that some companies with an initial disposition to provide financial help are inclined to despair of working out a mutually constructive plan.

If, however, the leaders of business will contemplate seriously the only available alternative to their extending voluntary help to our independent colleges and universities, their determination to work out a plan will be strengthened. For that alternative involves a grave weakening of our system of higher education, together with an involuntary increase in the financial support of higher education by business. The increase would come through higher taxes. Contemplation of such an alternative should, if necessary, toughen the will of business firms generally to do everything possible to extend financial help to our independent colleges and universities.

CONSTRUCTION EQUIPMENT NEWS

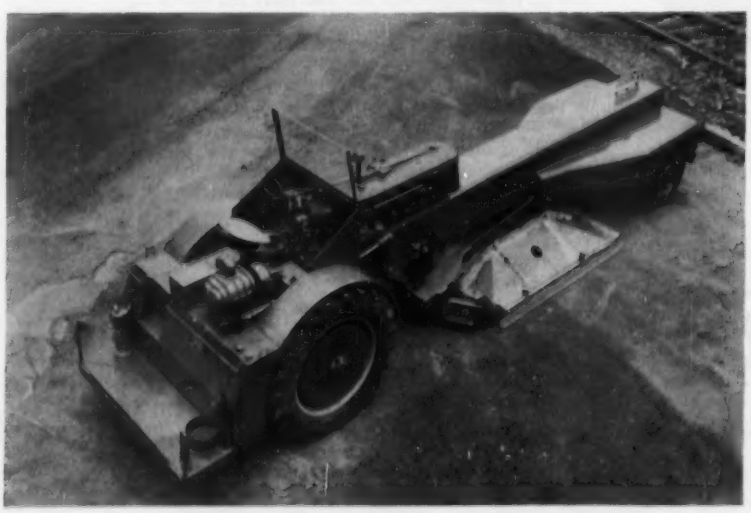
Truck Front-End Loader

This Holmes-Owen front-end loader designed for clean-up work, mounts on a Ford truck and operates hydraulically off the truck motor. It makes a one-man operation of scooping up, loading, hauling and dumping dirt by rugged lifting arms which hoist the load up and over the cab into the dump body.—**Hobbs Mfg. Co., Fort Worth, Tex.**



Automatic Boom Stops

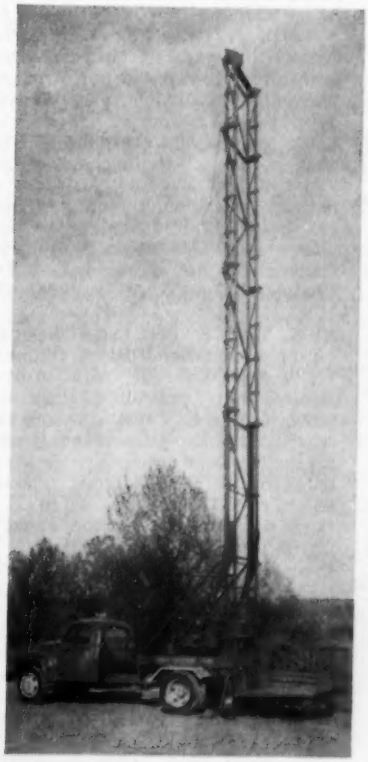
These Rud-o-Matic automatic boom stops atop the crane housing keep booms from being raised too high. Dual spring-loaded rams, mounted on the "A" frame of the crane, provide a soft, cushioning effect that checks critical movement in the event a load cuts loose and the boom whips back.—**McCaffrey-Ruddock Tagline Corp., Los Angeles, Calif.**



New Heater Planer

The Littleford-Clarkmoore asphalt road heater planer is designed to condition bituminous roads, streets and runways. It planes a path as wide as 81 in. and from a skin cut to a depth of 1 in., while moving a a speed varying from 8 to 88 ft per min. Dimensions are 20 ft wheel base; 28 ft 5 in. over-all and 82 in. wide. It has 5 speeds forward and is powered by an International 4-cyl engine. Between jobs travel is 20 mph.—**Littleford Bros., Inc., Cincinnati, Ohio.**

On-the-Job Previews of Machinery, Tools and Equipment

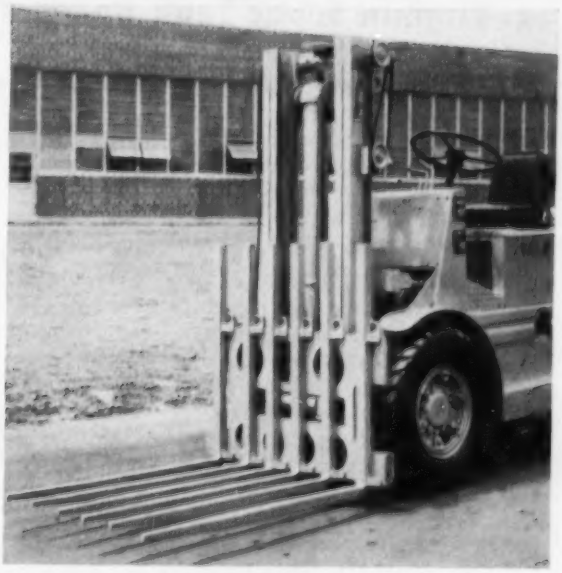


Truck-Mounted Hoisting Machine

Completely mobile, the Pelican hoisting machine is designed for mounting on contractor's truck to be driven to job site. It can be erected to a 42-ft unloading height in 23 min. Additional 5- and 10-ft sections can be added. It will raise a maximum of 2,000 lb. The steel tower folds jack-knife fashion for transporting. It's available in 12- or 21-hp models. Both models are powered by an air-cooled Wisconsin gasoline engine. Platform is removable and may be replaced with a self-dumping concrete bucket, available as optional equipment. — **Buck Equipment Corp., Cincinnati, Ohio.**

Masonry Nail Driver Cuts Work

Safe-T-Matic nail driver for driving masonry nails features a built-in permanent magnet which holds the nail in the correct position and a sliding safety shield. It takes masonry nails of ½- to 1⅛-in. length. Star drills, plugs or screws are unnecessary.—**Safety Nail Driver Corp., Clifton, N. J.**



Palletless Handler for Blocks

Easily attached to Yale fork trucks, these multiple forks swing individually 1 in., left or right to allow easier fork entrance in block cavaties. The forks are available in lengths up to 48 in., in increments of 2 in., and fork-spread up to 42 in.—**The Yale & Towne Mfg. Co., 1100 Roosevelt Blvd., Philadelphia 15, Pa.**

Power Plants

BETTER AC W-226 POWER UNIT—Allis-Chalmers has redesigned its W-226 heavy-duty power unit with a resulting increase in maximum brake horsepower and performance. The unit operating on gasoline will develop a maximum 60 brake hp at 1,800 rpm and 50.6 brake hp at 1,400 rpm. In addition to the choice of factory-installed gasoline, distillate or natural gas fuel equipment available for the W-226 in the past, the new power unit also offers factory-installed LPG fuel equipment.—**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**

NEW TRUCK ENGINE—The new 140-hp International Black Diamond 264 is a high torque, valve-in-head gasoline engine providing exceptional power output and fuel economy and is available as optional equipment for the five International R-160 series truck models. It is designed to power trucks in the 14,000 to 17,000 lb GVW range and highway tractors rated at 29,000 lb. Elements contributing to the efficiency and economy of the new engine include control expansion, three-ring aluminum pistons and positive full-pressure lubrication. A new high lift 50-deg ramp camshaft assures quieter valve operation and eliminates breakage. Counterbalanced, six main bearing crankshaft of the BD-264 is reinforced alloy steel with fillets at bearing journals, providing strength required by engine's high torque.—**International Harvester Co., 18 N. Michigan Ave., Chicago 1, Ill.**

Heaters

PORTABLE SALAMANDERS—The Clayton Salamander portable, oil fired, high velocity hot air space heater with an hourly output of 300,000 Btu provides contractors and construction crews with an economical and efficient means of heating semi-enclosed areas and overcoming cold weather handicaps. The unit is available with either electric-motor or gasoline-engine drive. Capacity is 2,400 cu ft of heated air at high velocity through 14-in. orifice with an hourly fuel consumption of 2.15 gal of kerosene or No. 2 stove oil.—**Clayton Mfg. Co., El Monte, Calif.**

"We get Speedi-Service on Yellow Strand!"

When you're rushing to beat a completion date or trying to keep materials moving on schedule, prompt and accurate attention to your wire rope needs is a "must"! Machines must be kept working for maximum production and profits.

That's why veteran construction men . . . men like C. A. Powley, excavating contractor, sand and gravel producer and crane service owner . . . endorse the immediate Speedi-Service of their Broderick & Bascom distributor.

Powley's many machines are working on scattered jobs throughout Central Illinois. When a wire rope needs replacement, it's needed *right now* and Powley reports, "We get Speedi-Service from our Yellow Strand distributor . . . and excellent service out of the rope itself!" Most of Powley's machines are equipped with Yellow Strand.

You can count on wire rope, when you need it and where you need it, from your Yellow Strand distributor and you can count on the kind of performance that produces extra profits from Yellow Strand Wire Rope. Give it a try!

Reports C. A. Powley
C. A. POWLEY CO.

BRODERICK & BASCOM ROPE CO.
4203 Union Blvd., St. Louis 15, Mo.

One of C. A. Powley Co.'s Yellow Strand-equipped cranes hoists material into position on a church building project. Powley uses cranes, shovels, draglines, scrapers, dozers, loaders, motor graders and other equipment in the company's material production, grading, excavating and hoisting operations.

SPECIFY . . .

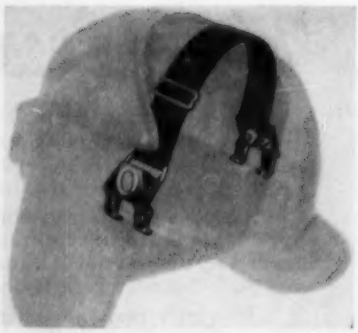
Yellow Strand

FOR SAVINGS . . . SAFETY . . . SPEEDI-SERVICE

Safety

PORTABLE BARRIER—The Safe-T-Bar consists of three basic units: a hinged sign frame, a folding A leg assembly, and an adjustable-height single leg. These can quickly be put together in combinations for single barricades, continuous barriers of any length or enclosure barricades around manholes or excavations for added safety. The standard sizes are 18x18, 12x36, 24x24, and 12x48 in. They are available either on sale or for rental through franchised distributors, or may be obtained by writing—**Barmotive Products, Inc., 440 Peralta Ave., San Leandro, Calif.**

SAFETY WELDING HELMET—A A novel yet extremely simple method of attaching a welding helmet to a



safety cap is embodied in the two clips and neoprene strap device recently designed. It provides double protection of the usual welding helmet, plus head protection for the welder working under conditions where there is danger of falling or flying objects. Quick installation of the speedy attachment to helmets in the field is done merely with a screw driver or a coin. The welder can instantly attach or detach the safety cap which is clipped into the helmet under the tension of the neoprene strap.—**The Fibre-Metal Products Co., Chester, Pa.**

NEW SAFETY EQUIPMENT — Tough safety hats and caps feature the geodetic suspension and pneumatic headband cushion which were developed by Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y. This "great circle" crown suspension distributes the force of a blow evenly over a large area of the head, thus minimizing the effects of the blow. The headband cushion consists of a series of twelve vinyl plastic air cells, located between the sweat band and the shell of the hat. This headband resists and distributes the impact of lateral blows on the perimeter of the head. The shell of the Willson super-tough hat is molded of fiberglas reinforced resins. Both hats and caps are available in five colors. Complete information can be obtained by writing to **Willson Products, Inc., Reading, Pa.**

Pumps

NEW 4-IN. CLOSED DIAPHRAGM PUMP—The new Rex pump is designed for application where the fluid to be pumped cannot be effectively handled with a centrifugal pump be-

(Continued on page 179)

★When It Comes to Loading the Big, High Ones Pettibone SPEEDALL Has Height and Reach to Spare!

With 11 ft. 7 in. clearance under the bucket hinge when fully raised, you can see why bigger hauls are being loaded with the Pettibone 1½ cu. yd. Speedall Front End Loader on the job. Even the smaller 1 cu. yd. Speedall clears 10 ft. 2 in.! Reach *from front tires?* Look at this: at 8 ft. dumping clearance the 1½ cu. yd. reaches 3 ft. 5 in.; the 1 cu. yd., 3 ft. 4 in. Compare this with others and you'll buy Speedall! Write for free bulletin.

OPERATOR ALWAYS SEES WHAT'S GOING ON

Fast, accurate loading is assured because the operator is "on top of his work." Spotting what's to be loaded and dumping it is a cinch—no wasted time groping for position! Four wheel drive, rear wheel steer, four big flotation tires—these, too, help even the inexperienced operator look good on a Speedall!

TROUBLE-FREE, BALANCED-DESIGNED FRAME

No front end loader—no, none—has as much *built-in* stamina and ruggedness as Speedall. Take a look at Speedall's clean lines. Examine its husky, balanced designed frame—*no counterweights are used!* Heaping bucketfuls, gathered with *smooth torque converter power,* are, therefore, routine with Speedall!

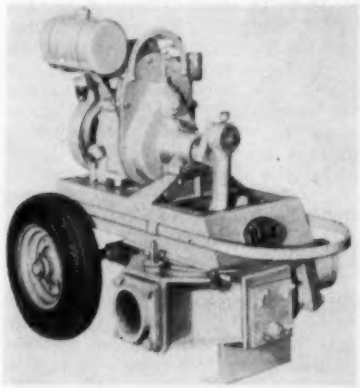
★ **Torque Converter Is Standard!**

PETTIBONE SPEEDALL Front End LOADERS

Another Member of the Labor-Saving "Speedy" Material Handling Family!

PETTIBONE MULLIKEN CORP.

4700 W. Division • Chicago 51 • SPaulding 2-9300



cause of a high solids content. Improvements include straight-line flow that helps to keep intake and discharge valves flushed and free of debris. Power is now supplied with a Wisconsin AKN 6.2-hp engine. The pump is equipped with a new adjustable towing handle that can be easily removed or telescoped out of the way for operation in cramped quarters. **—Chain Belt Co., Milwaukee 1, Wis.**

BIG CAPACITY PUMP — Situations requiring quick removal of water or other liquid can be handled easily with this pneumatic sump pump which requires no priming. It can be operated on any 105- or 125-cfm compressor and is small and lightweight, requiring little storage space. — **Schramm, Inc., West Chester, Pa.**

Concrete

TRUCKMIXER AND AGITATOR— Designed to meet the demand for a big truck-mixer mounted on a short wheel base truck to conform to axle weight limitation laws is this new Model M Hi-Boy Truckmixer and Agitator. The Model M series includes 4½-, 5½-, and 6½-cu yd capacity, with all models guaranteed to mix ½-cu yd more than rated capacity.—**Blaw-Knox, Pittsburgh, Pa.**

CONCRETE REPAIRS — Costly, time-consuming chipping, drilling, acid-washing, roughening and scarifying of concrete bases has been cut down as a prerequisite for making permanent concrete repairs by a new resinous, water-emulsion bonding agent called Weld-Crete. A brush or spray coat of this material is applied to any structurally sound surface and finished off with the required thickness of new concrete or cement topping. The new concrete is applied over Weld-Crete as soon as Weld-Crete dries or the job may be postponed from 1 to 10 days, if desired. It is usable in all climates in temperatures ranging from –35 to 310 deg. It may be used indoors or out. It will not burn, deteriorate, crack or craze. Tensile strength of a Weld-Crete bond exceeds 600 lb per sq in. Shear strength is 400 lb per sq in. Coverage is 250-400 sq ft per gal. **—Larsen Products Corp., 4934 Elm St., Bethesda, Md.**

CURING CONCRETE BLOCKS — One of the latest developments for curing concrete blocks is the warm air vapor process. In this process heated humidified air from a Baumann concrete or cinder block curing heater warms the kiln to the curing temperature at the proper rate and maintains that temperature until the blocks are cured and blows all vapor away from the kiln when curing is completed. The water spray nozzle to humidify the air properly is automatically controlled by the heating unit thermostat so that the spray operates only when heat is being supplied. It is claimed this method will cure a batch of blocks in a matter of hours, assure uniformity from batch to batch, produce a high quality block with no case hardening, and be relatively inexpensive to install and maintain.**—Arthur C. Baumann, 7011 Grays Ave., Philadelphia 42, Pa.**

NEW MIXOMETER — Now being used as standard equipment on the 1955 Challenge Pacemaker truck mixers is this Mixometer ready-mixed concrete quality control. It tells the operator how fast the drum is turning, how many revolutions the drum turns per trip, and the running total of drum revolutions during the

(Continued on page 185)

Bethlehem Hollow rips into quartzite during tunnel job at Burke, Idaho. Steel supplied by Bitco, Inc., Wallace, Idaho.

They moved 33,000 cu yd of rock for new tunnel in Idaho

The task was formidable—removing 33,000 cu yd of quartzite to make way for a new tunnel, 8500-ft long, at Burke, Idaho.

The tunnel, a 10 ft x 11 ft bore, is part of a lead-and-zinc mine owned by Hecla Mining Company. It was driven from the Hecla Plant to intersect Hecla's main Star Mine Shaft on the 2000-ft level. Reasons for the tunnel were many: (1) to improve ventilation (2) eliminate hoisting (3) eliminate pumping 100,000,000 gal of water yearly (4) reduce transportation time in reaching the working faces (5) carry a 13,200 volt cable through to underground machinery, and (6) reduce operating costs.

Construction of the tunnel was handled by Sullivan Mining Company, a subsidiary of both the Hecla Mining Company and the Bunker Hill & Sullivan Mining and Contracting Company. Lee Messerly was the superintendent in charge.

In the drilling operation, the medium-hard quartzite was removed by means of drifters. The blast holes ranged from 8 ft to 10 ft in depth. The contractor reports that the large tonnage of Bethlehem Hollow Drill Steel which was used on the project—1⅛ in. round and fitted with long-wearing carbide-insert bits—turned in an outstanding performance.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

MODEL 600 "POWER VANE" is powered by a General Motors Series 71 diesel engine and delivers 600 cfm. Unit has replaceable engine cylinder liners and direct electric starting with ether capsule, cold weather starting aid, as standard equipment. (Folsom Dam)

THE 600 MODEL supplies plenty of air for Guniting operations such as this on San Rafael bridge in San Francisco.

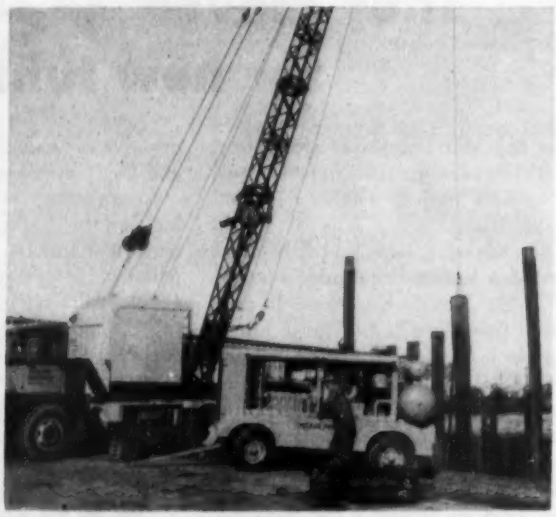
Portable Rotary Compressors...4 Sizes

CHICAGO PNEUMATIC TOOL COMPANY has a complete line of portable rotary compressors in 125-, 210-, 365- and 600-cfm sizes. Known as "Power Vane," these compressors weigh less than piston-type units of half their capacity and require 30% less space than equivalent piston types. Models 125 and 210 are gasoline-driven, while the 365 and 600 models are diesel-powered.

The compressor consists of a simple vane-type motor enclosed in a sealed compression cylinder. The rotor is not concentric with the cylinder. Sliding vanes inserted radially in longitudinal slots in the rotor create sealed sectors of varying capacity. Inlet and discharge porting eliminates valves. Two-stage compression develops top performance without excess loading of parts.

The compressor has tapered roller bearings, "pressurematic" drive to transmit full engine power, and a fitted step construction that assures perfect running alignment of all parts.

NEW COMPRESSORS have been designed to make towing easier. A lifting eye, centered in the roof, facilitates handling by a crane. This one is working at Socony Vacuum Building in New York City.



ALL MODELS of the Chicago Pneumatic line can be operated in a tilted position. They'll operate at angles up to 30 deg from the horizontal lengthwise, or 25 deg sidewise. (Encinal Terminal, Calif.)

The NEW Model HFC PAYLOADER®

with Torque Converter Drive for increased output

CAPACITY of Bucket
1 cu. yd. PAYLOAD
(¾ cu. yd. Struck-load)

THE Model HFC "PAYLOADER" is an improved design of a popular model that boasts thousands of satisfied users. This *new* unit, with torque-converter drive and other refinements, has been thoroughly field-tested and has proven itself superior in every respect — in work output, versatility and ease of operation. Its unique combination of Hough four-speed, full-reversing transmission and torque-converter drive provides "just-right" speeds forward and reverse for every job — plus smooth, shockless power flow at all times.

Your "PAYLOADER" Distributor is eager to show you what this Model HFC can do and to acquaint you with the many other sizes and types of *proven* "PAYLOADER" tractor-shovels.

PAYLOADER®
THE FRANK G. HOUGH CO. · LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
706 Sunnyside Ave., Libertyville, Ill.

Send literature on the new Model HFC "PAYLOADER"

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Title _____

Company _____

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City _____ State _____

"The right wire rope? That's *EASY* every time!"

IT'S A CINCH to pick the right wire rope for top performance in excavating and construction . . . and it pays off! Roebling's new catalog has a section devoted to rope for the excavating and construction field . . . shows at a glance the best rope for each purpose and gives you a simple, unique code number ordering system which for the first time in wire rope history *positively* identifies the desired rope.

Write for your copy of the new "Roebling Wire Rope Recommendations and Catalog". And remember that the Roebling Field Man at your nearest Roebling office or distributor is always available to help find the answer to special wire rope problems.

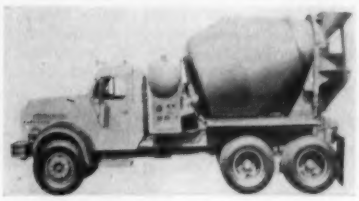
ROEBLING CF

Subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J.

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13235 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

life of the mixer. It's available in eight sizes ranging from 3- to 8-yd capacity. According to the manufacturer, this is the first time that ready-mixed concrete producers have been given a simple means of controlling the quality of the concrete after it reaches the mixer drum.—**Cook Bros. Equipment Co., 3334 San Fernando Rd., Los Angeles 65, Calif.**



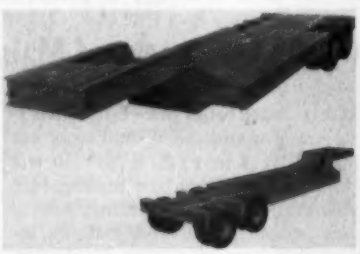
1955 CHALLENGE MIXERS—The Pacemaker is now available in eight sizes: 3, 3½, 4, 5, 5½, 6, 6½ and 8 yd capacities. In addition the Pacemaker is made in four side engine models, 5, 5½, 6, and 6½ yd. sizes; and two power take-off models 3 and 3½ yd sizes.—**Cook Bros. Equipment Co., 3334 San Fernando Rd., Los Angeles, Calif.**

Trailers

REAR DUMP—To meet the need for a greater capacity hauling unit in the size powered by the Model C Tournapull, LeTourneau - Westinghouse has announced the capacity of the new Model C rear dump has been increased from 18 to 22 tons. The price remains the same. The new

unit now is rated at 14.7 cu yd with a heaped capacity of 17 cu yd. The over-all length of the entire machine in traveling position is now 30 ft 9 in. longer than before, while the wheelbase remains the same, 16 ft 4 in. The gage of the new rear dump is now 9 ft.—**LeTourneau-Westinghouse Co., Peoria, Ill.**

NEW DUMP TRAILER—A new lightweight hydraulic-lift dump trailer has just been announced by Clement-Braswell, Inc. designed to eliminate heavy, rigid frames. Suited to heavy service on round-the-clock operations, it can haul sand, gravel, coal, aggregates and all types of bulk materials. It is adaptable to any standard tractor or truck, and the lifting mechanism can be mounted in less than 3 hr. It is available in sizes of from 10 to 25 cu yd single or tandem models.—**Clement-Braswell, Inc., 505 First National Bank Bldg., Shreveport, La.**



DORSEY TRAILERS—The new HTS model Dorseys are being produced in capacities from 15 to 35 tons with no sacrifice in the ruggedness of the welded cross-members of the new models. Several refinements in the design include change in walking beams and walking-beam brackets mounting brake chambers on extensions of the stub axles instead of separate brackets and locating the floor plate on the under side of the neck to increase strength and give greater carrying capacity for blocks, chains, tackle and other gear used in moving heavy loads.—**Dorsey Trailers, Elba, Ala.**

LIGHTER TRAILERS—The Rogers Line of Trailers is built of light but strong steel and is equipped with the Rogers Type T unit. A saving of a full ton is made in the 20-ton size, with corresponding weight savings in other capacities. They have been reduced in price.—**Rogers Brothers Corporation, Albion, Pa.**

Heat treating gives LIMAS greater strength and longer service life

In the 1500 degree F. circle, formed by this battery of gas burners, is a shipper shaft pinion destined to become a vital part of a LIMA shovel. This heat, the succeeding water quench and controlled tempering process, establishes a uniform hardness up to two inches in depth to the teeth and teeth base of the pinion. This means longer serviceable life to this important part.

Flame and induction hardening are used on rollers, gears and shafts of every LIMA machine. Heat treating, used with our know-how, is one of the reasons why LIMA is known throughout the world for quality—cost-conscious equipment men everywhere are saying, "you can depend on a LIMA for low maintenance and less down-time."

COMPARE QUALITY! No other machine gives you as much as LIMA!

1. Piston ring type dirt seal rings and retainers in crawler rollers.
2. Moving parts are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation.
4. Anti-friction bearings at every vital bearing point.
5. Big capacity drums and sheaves are easy on cables.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath.
7. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

The above advantages contribute to LIMA'S greater output, less down-time and lower maintenance.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

LIMA Type 604—1½ yd. shovel on highway work in Colorado.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

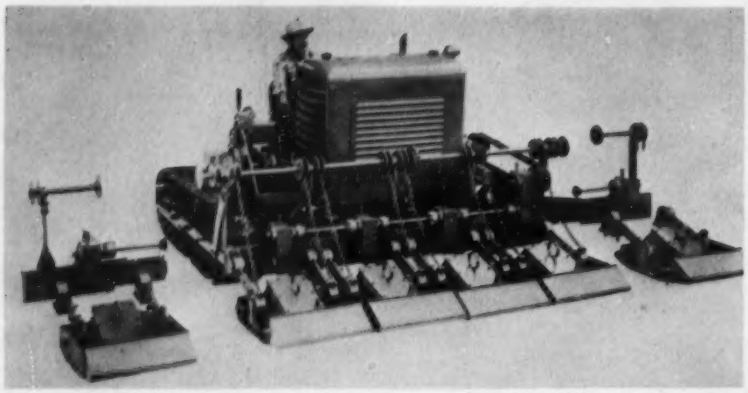
BALDWIN BLH LIMA-HAMILTON

LIMA SHOVELS · CRANES · DRAGLINES · PULLSHOVELS

BALDWIN-LIMA-HAMILTON

Construction Equipment Division · LIMA · OHIO · U. S. A.

Rollers-Compactors



ROAD COMPACTORS—The Model VT 6-4 vibro-tamper has been redesigned with crawler tracks spaced 8 ft apart instead of 12 ft for operation with either 4, 5, or 6 compaction shoes. This change is said to have increased the machine's versatility for single-course base and sub-base compaction of both macadam and concrete roads and runways. Due to the application of vibrating and tamping forces, the Vibro-Tamper can lay an entire sub-base for a road in one single course set to a depth of 12 to 15 in. An 85-hp Ford industrial engine provides power to the shoes through a common drive shaft. Power is transmitted to the crawlers through a forward-reverse gear and a four-speed transmission to give the operator a choice of six travel speeds in both forward and reverse. Steering is done by clutches on the crawler drive shafts. Compaction vibration frequencies of 2,800 cycles per min are obtained by eccentrically mounted weighted gears in the 465-lb shoes. Total contact area of 6 shoes is 19.8 sq ft, while gross weight of machines is 10,000 lb. **The International Vibration Co., 16702 Waterloo Rd., Cleveland 10, Ohio.**

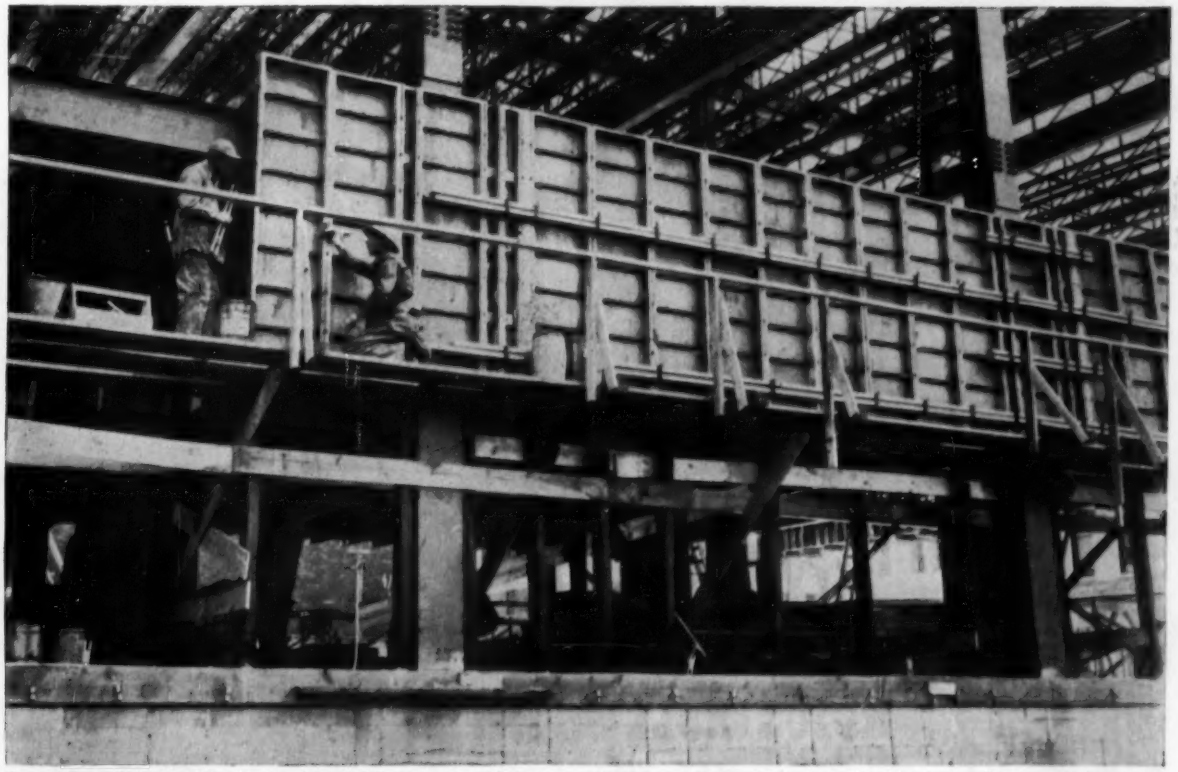
Loaders

SPEED SWING LOADER—Featuring a 180-deg boom swing the Pettibone speed swing loader permits discharge of load left or right, in addition to front. Offered in ¾- and 1-cu yd bucket models, it is designed with a 30-deg. bucket tilt up to provide fast shovel action and permit full loads. Its claimed loading time can be reduced from one-third to one-half, particularly in tight positions. The unit is also available with two- or four-wheel drive and optional four-wheel steer. Standard equipment includes torque converter transmission system, a 5 ft 4-in. reach from the front tires at a 7-ft dumping height and a 3 ft 3-in. reach at a 9 ft 8-in. dumping height. Forward reversing lever, hydraulic steering, 4-wheel hydraulic booster brakes and full hydraulic control. Powerful down pressure on bucket, bucket float control, replaceable bucket lip, large flotation tires on all four wheels and heavy-duty axles.—**Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill.**

TRACTOR LOADER—The new Davis loader has many new features including double-strength lift arms because of the debossed box-type construction, down pressure on the lift rams for greater utility in excavating and maintaining grades and rubber mounting which minimizes the shock load on the front of the tractor and shock slots that transfer the thrust to the rear. The loader also has a centralized reservoir which provides a clean hydraulic system. The Model 101 series of loaders fit 2-3 plow tractors and the Model 102 with twin dump cylinders fits 3-4 plow tractors.—**Mid-Western Industries, Inc., Wichita, Kan.**

TRUCK-MOUNTED BOOM LIFT—Of cantilever construction, the hydraulic lift capable of lifting 1,500 lb has been introduced by Root Spring Scraper Co., 517 W. North St., Kalamazoo, Mich. Lifted load can be swung in a 40-deg arc by hydraulic power, and all operations are controlled from cab by operator. The hitch or boom supporting frame can readily be mounted on any truck from 1½ tons up. The same frame is designed to support a hydraulically controlled snow plow, greatly increasing the utility of the truck.

IMPROVED PAYLOADER — This rear-wheel drive model featuring a combination of a special Hough-built transmission plus torque-converter drive is the Model HFC Payloader. It has a heaped bucket capacity of 1 cu yd and ¾-cu yd struck load. The torque converter is of the self-cooled, three-element type which automatically multiplies torque output of the engine in direct proportion



Symons Forms being used for forming Spandrel Beams up to 8½ feet on the Minnesota Mutual Life Insurance building. 9,000 square feet of Symons Forms were reused 12 times on this job. Symons Shores are also visible below. William Baumeister Construction Co., St. Paul, general contractor.

Contractor Cuts Two-Thirds off Forming Costs of Spandrel Beams with Symons Forms

Because of the efficient combination of Symons forming, shoring and scaffolding methods, the contractor was able to cut his estimated cost by two-thirds on the $2,000,000 home office building of the Minnesota Mutual Life Insurance Company of St. Paul, Minnesota.

In addition to savings in labor cost, considerable time was saved in forming the Spandrel Beams of this 9-story building. Sidewalk superintendents looking out of windows of the many surrounding office buildings could see real progress day after day. Forms were walked in place as efficiently as though they were on a footing on the ground. The adaptability of Symons Shores with their safe "T" heads speeded the forming and scaffolding work. The combination of forms, shores and scaffolding was the result of recommendations made by the Symons fieldmen.

All foundation walls are 16 feet in height. Note the use of only three walers.

This is the second of the big, new life insurance structures in the Twin Cities using Symons Forms for the concrete construction. It is the first of its size in St. Paul using a structural steel skeleton with standard and clear span joists, with its decking of corrugated steel sheeting covered by concrete. 2 x 8 ft. Symons Steel Rib Forms were used to frame 56,000 square feet of spandrel beams. Symons Shores were used throughout in beam construction. All foundation walls are 16 feet in height.

Symons Engineering and Customer Service also played an important role in this project. The Symons Engineering Staff furnished complete form layouts and job cost sheets on the form work—at no charge to the contractor. This service enabled the contractor to get a clear picture of his job (its cost, bill of materials and labor saving methods). Symons fieldmen gave regular on-the-job service. First, by on-the-job recommendations of forms and hardware needed. Second, by showing the workmen how to set up the forms efficiently. Third, by being available and giving service on last minute requirements.

View of a spandrel beam after Symons Forms have been removed.

Symons Forms, Shores and Column Clamps can be rented with purchase option. All rental charges apply on the purchase price, during a 60-day period.

WANT MORE FACTS ON SYMONS ?

☐ Forms ☐ Shores ☐ Column Clamps

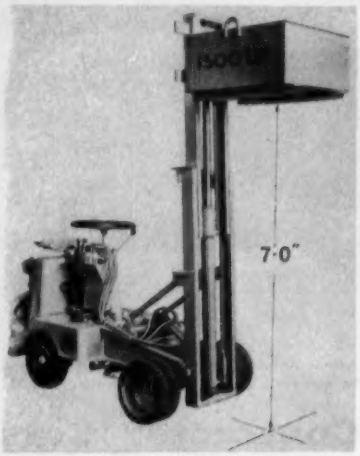
Check information wanted, attach to your letterhead, sign your name and mail to us immediately.

Symons

SYMONS CLAMP & MFG. CO.

4255 Diversey Ave. • Chicago 39, Ill. • Dept. 185

to the load requirements. The new Hough-built transmission is of a full-reversing type giving four speeds forward and four reverse.—**The Frank G. Hough Co., 706 Seventh St., Libertyville, Ill.**



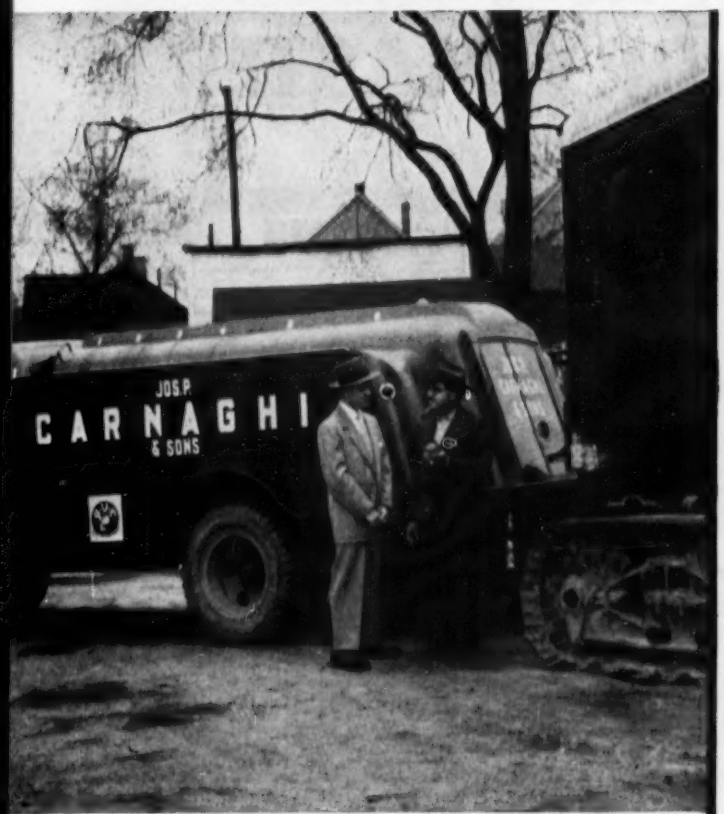
MOTO-BUG ATTACHMENT—A 1,500-lb capacity hydraulic fork-lift attachment for the Model R 15 moto-bug is rated to lift its maximum ¾-ton load to a height of 7 ft in 14 sec. The mast of the hydraulic lift attachment can be tilted 10 deg toward the rear to insure better load balance or 2 deg forward as an aid in picking up or releasing load. Standard forks are 30 in. in length and adjustable from 6 to 32 in. in width. The unit has been developed by the **Kwik-Mix Co.**, a subsidiary of the **Koehring Co. of Milwaukee, Wis.**

Spark Plugs

TRIPLE-ELECTRODE PLUG—Recently developed is a triple electrode spark plug with concave ground electrodes that brings four advantages to automotive engines, according to the manufacturer. These advantages are lower fuel consumption, more power, less plug fouling and easy cleaning. In addition to the triple electrodes, the TC-3 also adapts the solid copper gasket and high quality 95% aluminum oxide insulator used in jet plugs. The three gaps are factory set. If one electrode burns or erodes away beyond the most efficient gap setting, the other two remain properly set to make sure of complete combustion. In field

(Continued on page 193)

Carnaghi digs into lubrication problem...comes up with answer



Ray J. Carnaghi (right) discusses lubrication of equipment with Frank Wolan, Standard Oil automotive engineer. Frank has been serving customers for Standard Oil since completing the Standard Automotive Sales Engineering School. He got his engineering training at Michigan State College. Customers have found Frank's experience and training pay off *for them.*

Contractor Joseph P. Carnaghi & Sons dig foundation for new building. STANOLUBE HD-M Motor Oil is used in all Carnaghi equipment.

STANOLUBE HD-M
MOTOR OIL

Like every outfit in the business of moving earth, Joseph P. Carnaghi & Sons, Detroit, know what it means to keep equipment on the move. There is no place on the schedule for stuck rings, bearing failures, fouled plugs. Down time due to lubrication failure is something Carnaghi learned how to eliminate 20 years ago. It was then that this contractor began using Standard Oil products.

Now STANOLUBE HD-M Motor Oil is used in Carnaghi trucks, cranes, shovels and dozers. Earth haulers that go away heavy and come back light, give oil a full challenge to deliver trouble-free operation. Wet, dry, heat, cold, and grit are the order of business for dozers, shovels, and cranes. They give motor oil tough, rugged jobs to do.

STANOLUBE HD-M stands up to the jobs Carnaghi gives it with a wide margin to spare. It is designed to do just that. Carnaghi equipment maintenance men have found this out from inspection of equipment at overhaul time. Their skilled maintenance, teamed with STANOLUBE HD-M, result in:

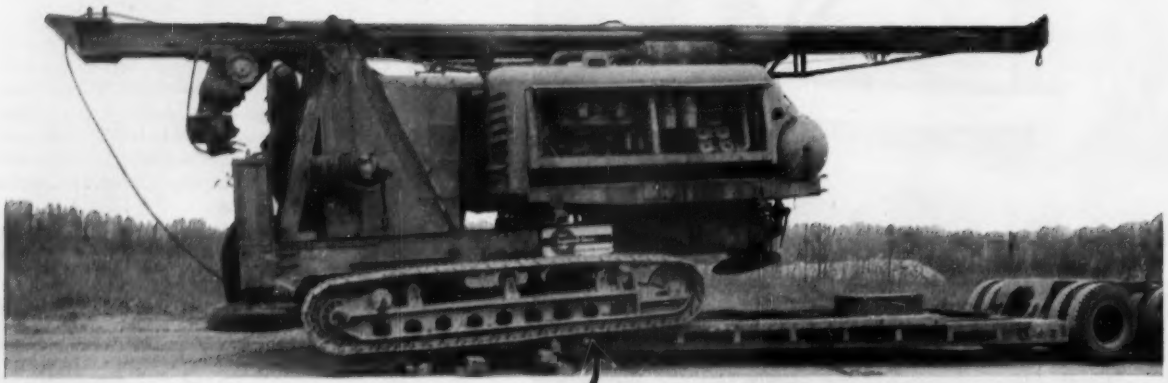
1. Pistons free of varnish
2. Less cylinder and ring wear in high temperature service
3. Valve stem deposits and valve burning virtually eliminated.
4. Engines unaffected by unstable fuels
5. Less spark plug fouling
6. In low temperature service, less sludge

This sound like the kind of operation you would like for your equipment? A Standard Oil automotive engineer will be happy to tell you how, with STANOLUBE HD-M, you can get it. In the midwest, a call to your nearby Standard Oil office will bring prompt response. Or contact Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD

STANDARD OIL COMPANY (Indiana)

Here's the easiest way to load a QUARRY MASTER...



1

Removing the gooseneck

2

easy front-end loading with a TALBERT removable gooseneck* trailer

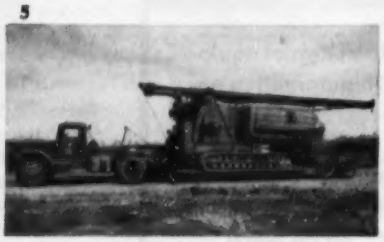
3

Attaching the gooseneck

4

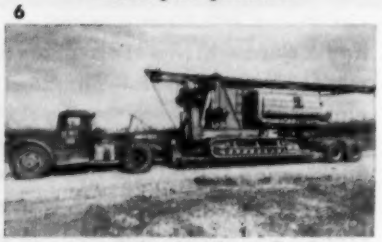
Ready to engage gooseneck and fifth wheel

5



Gooseneck engaged

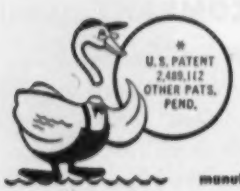
6



Loaded and ready to roll

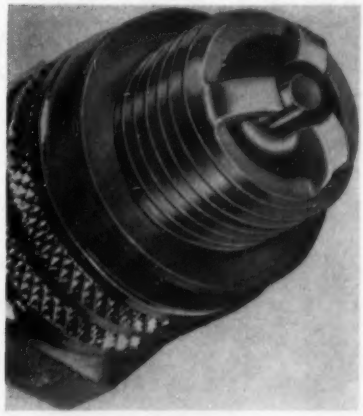
Wherever highways are built, buildings constructed, excavations made . . . wherever there is heavy equipment to be transported . . . you'll find a need for a Talbert Removable Gooseneck Trailer. The lightweight removable gooseneck permits easy front-end loading, as shown. The elimination of long boards and complicated blocking provides safe "one-man operation."

Large "production-priced" tires and spring tandem suspension provide worthwhile operational savings, The Talbert way is not only the easy way — it is also the economical way!



THE TALBERT CONSTRUCTION EQUIPMENT CO.

7952 West 47th Ave., Lyons
(Chicago suburb), Illinois
Phone: LYons 3-3169
manufacturers of Talbert Low-Bed Trailers and Dump Semi-Trailers

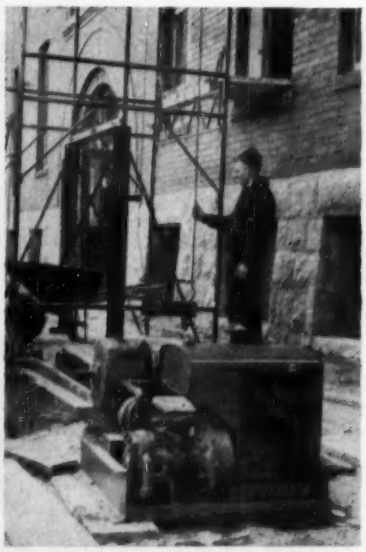


tests of the plug made by operators, fuel savings up to 40% have been noted. Acceleration and power increased 6% simply by switching to triple electrode plugs. Some TC-3 plugs installed in trucks ran for more than 40,000 mi before they were removed. The Auburn TC-3 is manufactured to fit all gasoline engines in trucks, buses, automobiles, tractors, construction equipment outboard motors, power saws, etc.—**Auburn Spark Plug Co., Auburn, N. Y.**

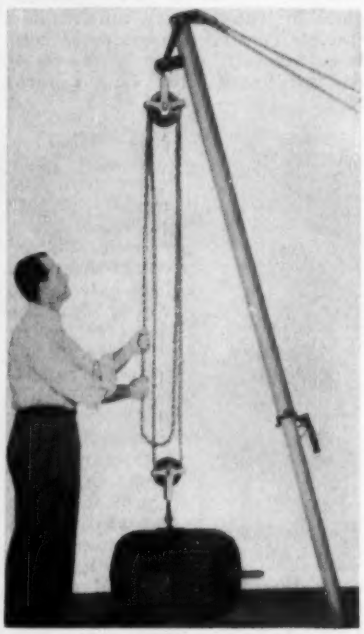
1955 MODEL—The new turbo action spark plug recently adopted as original equipment for all Ford trucks has now been extended to Ford, Mercury and Lincoln motor cars. Some of the advantages claimed for this plug are its adaptability for high compression high output engines. It has an extremely wide heat range and anti-fouling characteristics. It can be used only in the 1955 models.—**Champion Spark Plug Co., Toledo, Ohio.**

Hoists

AUTOMATIC HOIST—The new hydro-king automatic hoist for material towers requires no clutches or brakes and no adjusting. The oil tank is built into the frame of the hoist, and no maintenance or lubrication is necessary except on the gas engine. The hoist is started by one man above or below by pulling a manila rope. Stops automatically by pre-set cable clamps. Automatic throttle control delivers power when needed. It is made in two sizes for 1,000- and 2,500-lb towers. It will



operate single-well or double-well towers, as desired. It uses a Wisconsin air-cooled gas engine.—**King Mfg. Corp., 3146 W. Chicago Ave., Chicago 22, Ill.**



SKYHOOK—The Magic-Pole Unipod is a hoist support while lifting, shifting or lowering equipment. The standard model supports 2,000 lb, yet weighs only 22 lb. It can be closed to 6 ft, 4½ in. for easy storage. On job location the magic-pole can be extended by 6-in. steps to 10 ft 2 in. Any position is positively held by a locking handle which is secured by a chain to prevent loss. Two high strength 20-ft guy lines are included as standard equipment. Each line will support more then 1 ton. Selling price complete is $31.90. —**B. E. Wallace Products Co., Exton 10, Pa.**

Lick 30% grades on San Fernando Freeway

8 C Tournapulls average 1040 yds. per hour on 1500′ hauls

Follow the leader — Dragging their blades, Tournapulls roll down 35% grade on way to fill. Powerful disc air-brakes provide more braking surface on 1 wheel than most haulers have on all 4.

When *J. Tomei & Sons Construction Co.*, Van Nuys, California, have a tough job to handle, they always rely on Tournapulls. This was the case on the 1,400,000-yd. relocation and rebuilding of Highway 99 as a freeway in Weldon Canyon, near San Fernando.

In this rugged mountain area, grades ranged up to 35% favorable on the haul and 30% adverse on the return. Job consisted mainly of cutting to grade through tops of a series of hills and filling in roadbed in valleys between them. Material included sand, sandstone, clay and shale. To handle all the dirt-moving, Tomei brought in 8 C Tournapulls. Here's how they performed on typical cycles:

Deliver a load every 41 seconds

Push-loaded with 13 pay yards, each Tournapull hauls 1500′ down the 35% grade to the fill. "C's" completed 3000′ cycles every 5.5 minutes, in spite of the 30% grades on return. Each moved 10 loads per 55-min. hour, for a combined hourly output of 1040 pay yards.

Get all the facts

Find out how Tournapulls can give you increased production in *any* material, under *any* conditions. Let us show you . . . we can back every claim with performance.

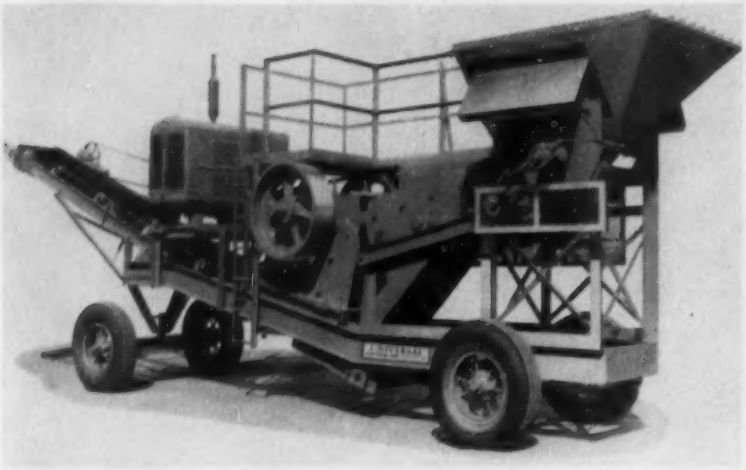
Tournapull—Trademark Reg. U.S. Pat. Off. PDP-622-H-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

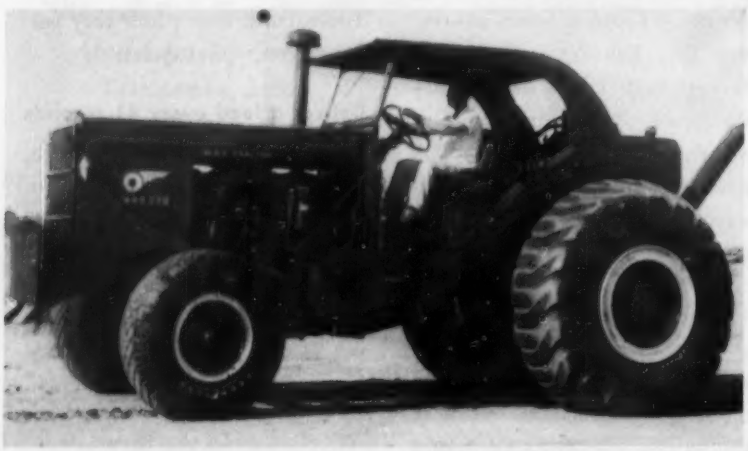
A Subsidiary of Westinghouse Air Brake Company

Crushing-Screening



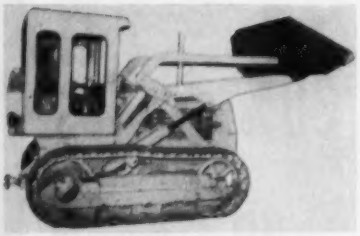
CRUSHING AND LOADING PLANT—The new TS-Traveler, gravel screening and crushing and loading plant consists of a 1½-yd hopper with trap grate, reciprocating 19-in. plate feeder, 2x4-ft inclined gyrating screen, a 1024 roller bearing jaw crusher, 24-in. folding channel frame front delivery conveyor, clutch control and operator's platform and power in a new arrangement on a pneumatic-tired gooseneck truck. The unit is designed for crush and travel operations where production requirements are moderate. The reciprocating plate feeder carries the pit run gravel to the screen where natural finish is removed. Over-size is scalped to the jaw crusher. Crushed gravel together with screened material is delivered to trucks or stockpiling conveyors. The traveler plants are offered in three types, for single-pass or closed circuit operation.—**Universal Engineering Corp., Cedar Rapids, Iowa.**

Tractors



M-R-S TRACTOR—Engineered to power scrapers up to 30-cu yd struck capacity pusher loaded and 18-yd struck scrapers self-loaded, the new 19.5-ton M-R-S prime mover has 10 speeds forward up to 35.16 mph. A special 4-wheel design, easy power steering and convenient controls enable the operator to obtain maximum performance from the tractor. The M-R-S has a hydraulic weight transfer device which permits a production of 46,956 lb draw-bar effort. The M-R-S not being permanently attached to the scraper can quickly be unhooked and used for powering large compaction rollers, rippers, trailers and pushing scrapers.—**The M-R-S Mfg. Co., Jackson, Miss.**

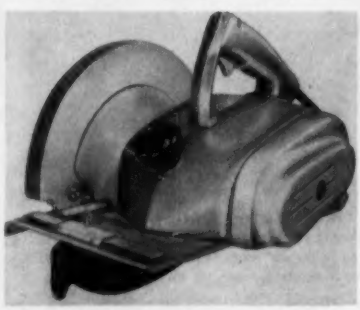
CABS FOR D4s—Specially recommended for the Caterpillar HT4 Traxcavator this cab constructed of 12-gage steel which is reinforced by 3/16-in. structural steel framing will fit all Traxcavator-equipped D4 tractors beginning with serial No. 7U11952 that are not equipped with



fender fuel tanks. Dimensions of the cab are: height, 56 in., width, 52¼, length 44¾, door opening 48x25 in. Shipping weight is about 700 lb.—**Dept. KP, Crenlo, Inc., Rochester, Minn.**

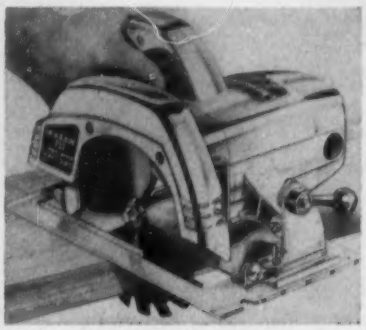
Saws

SAW BLADES—This Roc-Edge saw blade costs less than regular blades and lasts two to three times longer, according to the manufacturer. The blade is of nickel-hardened chrome steel and is available in two sizes, 6 and 8 in. Four different hole sizes and shapes in each of the two models permit use with practically any portable saw. The blade is of special sabre tooth design allowing, the manufacturer says, a positive cross-cutting and ripping action.—**Rocco Products, Dept. KP, 2916 Fourth Ave., S., Minneapolis 7, Minn.**



NEW PORTABLE SAW—The Model 52B, a new portable electric saw weighing 20 lb, has a maximum cutting capacity of 3¼ in. with a 10 in. diameter blade to its line. The new

flat belt drive eliminates the ordinary gear drive with its attendant lubrication, costly repairs and replacements. The 1½-hp motor drives the 10-in. blade at 4,000 rpm. The saw can be adjusted for a depth of cut from 1½ to 3¼ in. and to make angle cuts from 90 to 45 deg.—**The Syntron Co., 500 Lexington Ave., Homer City, Pa.**



INDUSTRIAL SAW—Designed for industrial commercial use by carpenters, contractors, this 100% ball-and-roller bearing construction saw weighs only 10¾ lb, which makes it one of the lightest weight full power saws on the market. The manufacturers claim that the Maxaw 757 will make every cut in any house. It will cut a 1⅞ in. at 45 deg or a 2⅛ in. at 90 deg.—**John Oster Mfg. Co., Milwaukee, Wis.**

CLEARING ATTACHMENT—Homelite Corp. has announced a new low-cost attachment that converts the Homelite Model 17 chain saw into an all-purpose clearing unit. It is designed for faster, easier, more profitable clearing. The attachment also eliminates stoop and squat in felling and permits reaching out to the limb without having to go underneath. Jaw-grip spike permits plunge bucking of logs right on the ground. Spike bites into the dirt, keeps chain out of the dirt. Spike takes thrust of the chain and prevents logs from rolling or spinning away.—**Homelite Corp., 48 Riverdale Ave., Port Chester, N. Y.**

ON THE JOB EVERY DAY FOR 3 YEARS!

Removing manhole castings, Gradall loosened, removed, and loaded onto truck. Its smooth arm-action and hydraulic power handled the job without damage to castings, so most could be salvaged.

Removing and setting curbing. Gradall dug behind curb, loosened, then lifted it free with special giant tongs and loaded. A total of 19,000 feet of this sandstone curbing was salvaged from the old road and re-set by Gradall along new roadway.

Grading for sidewalk, Gradall quickly completed the job, holding ¼" accuracy. Form crews moved in right behind Gradall to keep construction moving along at a fast pace.

Digging trench for drainage tile right next to retaining wall demonstrates the complete control operator has of Gradall's hydraulically-operated telescoping boom and wrist-like action of bucket.

Working in tight spots is no problem for the Gradall, thanks to the telescoping action of the boom. Gradall was able to dig right up to the retaining wall, and worked easily under the low clearances of the several bridges.

Setting light poles, Gradall boosted the rate from 17 to 51 per day. Gradall also dug the small foundation footers, 3,500 feet of conduit trenches, set pole boxes, and loaded poles on and off trucks.

Grading slopes and loading out spoil, Gradall shows off its long telescoping "reach." Operator dressed high slopes to extreme accuracy, then swung around to load truck on roadway, dumping spoil to insure capacity loads in trucks.

The Horvitz Co. uses Gradall on all phases of $3,500,000 Cleveland expressway contract

THE JOB, started in 1951, included construction of an 8-lane expressway with necessary access roads and interchanges, plus the many supplementary jobs involved.

Gradall was on-the-job *every working day* handling all the jobs pictured at left plus many others. The foreman summed up the Gradall's performance this way: "We use Gradall for *everything* these days. It's like having an educated right hand!"

Gradall has proved itself a profit-maker for The Horvitz Co. And like Horvitz, you'll keep a Gradall busy on every contract you get—handling jobs no other machine can touch, eliminating hand labor, doing jobs better, faster, and more profitably!

Look at the many other jobs handled by Gradall!

- Ditching
- Grading shoulder berm
- Scoring and ripping out old pavement
- Trenching
- Placing pipe
- Backfilling
- Materials handling
- Pulling concrete form pins
- Excavating
- Hand finishing and clean-up

Gradall
DIVISION OF WARNER & SWASEY Cleveland

Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

THIS AMSCO® LIP TAKES A SHARPER BITE

. . . chews out full loads at normal power

The lip juts way out where it easily bites up—and delivers—the full yardage of rock or earth. It's a sharp *extension* of the dipper, with fanned teeth—for fast, easy penetration. The dipper digs out a heavier load without strain on the shovel . . . even requires less power, and prolongs life of all parts.

This Amsco lip lasts a long, long time, because it's made of the toughest steel known—manganese steel—the metal that work-hardens to fight off wear by impact and abrasion. Lip replacement is simple, when necessary, keeping downtime short.

If getting more pay loads moved faster with less wear on equipment means more profits to you, *specify Amsco Renewable Lip Dippers.*

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

Continued from page 30

tion projects was at a new all-time high of $79.7 billion, up $5.6 billion over a year ago.

New England, Middle Atlantic Boom in '54

The CM&E estimate last March (March '54 CM&E, page 10) that heavy construction contracts would hit $14.4 billion was a bullseye. After a slow first quarter when contracts fell 34% below '53, awards set a record in the second quarter. Sparked by highways, commercial building and private mass housing, contracts went on to narrow the '53-'54 gap to only 3% by year's end (the percentage is based on average weekly volume because 1954 had 52 weeks, compared with 53 weeks in 1953).

Contracts set new records in three regions. New England has the sharpest increase with awards booming 18% above '53 to a record $734 million. Volume rose 15% in the Middle Atlantic, topping $3.4 billion, while West of the Mississippi was up 2% to more than $3.4 billion.

Business held up in '54 in the Far West where the $1.7 billion was only 2% under '53. In contrast, volume dropped 16% to $2.8 billion in the Middle West and the South fell 24% to $1.9 billion.

SOME BIG CONTRACT AWARDS OF THE MONTH

C. F. Braun & Co., 1000 S. Fremont Ave., Alhambra, Calif. Construction of an oil refinery at Delaware City, Del. for the Tidewater Associated Oil Co., 17 Battery Place, New York City 4. $75,000,000.

F. H. McGraw & Co. and Hydrocarbon Research, Inc, both of New York City, urea fertilizer plant for the Republic of Korea. $25,000,000.

Ragnar Benson, Inc., 2 Gateway Center, Pittsburgh, Pa. 14-story School of Medicine, Nursing and Dentistry and Pharmacy for the University of Pittsburgh. $13,000,000.

The Arthur A. Johnson Corp., & McLean-Grove Co., Inc., 347 Madison Ave., New York City 17. 2.83 mi of Thruway and 3.85 mi access roads on the New York State Thru-

way, New England section, for the Bureau of Contracts & Accounts, The Governor Alfred E. Smith State Office Building, Albany, N.Y. $12,359,414.

R. C. Mahon Co., 6565 E. 8-Mile Road, Detroit, Mich.; **Taylor & Gaskin, Inc.,** 2210 Park St., Detroit 2; and **Copco Steel & Engineering Co.,** 14035 Grand River St., Detroit. Steel contract for assembly plant, power-house plant alterations, conveyor bridge and equipment for the Chrysler Corp., 341 Massachusetts Ave., Detroit. $20,000,000.

George M. Brewster & Son, Inc., 275 Fort Lee Road, Bogota, N.J. Grading, drainage and paving from Brown Place to Communipaw Ave., Jersey City, in connectioin with the construction of Newark Bay-Hudson County extension of the New Jersey Turnpike for the New Jersey Turnpike Authority, Administration Bldg., New Brunswick, N.J. $7,945,232.

Rusciano & Son Corp., & **Del Balso Construction Corp.,** 728 E. 212 St., New York 67. 2.95 mi New York State Thruway, New England section, for the Bureau of Contracts & Accounts, The Governor Alfred E. Smith State Office Building, Albany, N.Y. $6,409,804.

Edwin Moss & Son, Inc., 555 Grant St., Bridgeport, Conn. Casting foundry adjacent to present property at Fairfield, Conn. for J. W. Bullard Mfg. Co., 1342 Kings Highway, Fairfield, Conn. $6,000,000.

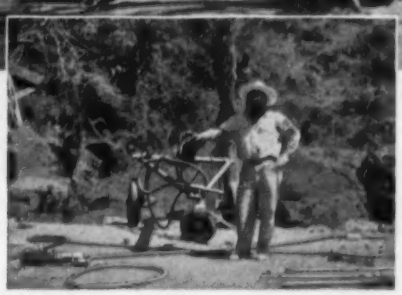
Girdler Co., 244 E. Broadway, Louisville, Ky. Anhydrous ammonia plant for fertilizer at Searsport, Me. for Northern Chemical Industries, Inc. Searsport, Me. $9,000,000.

C. J. Montag & Sons, 7805 N.E. Halsey St., Portland, Ore.; **Carl M. Halvorson,** 10626 S.W. Packing Highway, Portland; **Cascade Contractors,** 1300 W. Nickerson St., Seattle, Wash., and **Austin Co.,** 2930 4th St., Seattle Wash. Non-overflow dam. The Dalles Dam, Wasco Co., for U.S. Engineers, Pittock Block, Portland. $12,661,246.

Wm. Simpson Construction Co., 2401 Beverly Blvd., Los Angeles, Calif. 12-story office building at Los Angeles for Superior Oil Co., 601 W. Fifth St., Los Angeles, Calif. $3,000,000.

In TROPICAL JUNGLES, too, GYRO-FLO means dependable air power

GYRO-FLO 315 cfm portable compressor on location near Laguna de Güija dam site, El Salvador. In this remote and isolated spot, GYRO-FLO's exceptional freedom from maintenance has been an important advantage.



A JHM Wagon Drill and three J-50 Jackdrills form the "business end" of this I-R Contractors' Combination—averaging 1200 feet per bit with Series 115 Carsets in hard abrasive basalt.

HERE, in the tropical jungle of Central America, an I-R Contractors' Combination is helping to dam the outlet of Lake Güija. Consisting of a 315 cfm GYRO-FLO portable compressor, JHM wagon drill and three J-50 Jackhamers, this combination is being used by Padilla-Cuéllar, contractors, for removal of 100,000 cubic meters of rock and the building of a 12 meter by 60 meter dam—part of a large hydro-electric project under the Comisión Ejercitiva del Río Lempa.

Drilling in hard abrasive basalt, with Series 115 Carset Jackbits, they have averaged 1200 feet per bit. And the 315 cfm GYRO-FLO rotary compressor has lived up to its reputation for smooth, trouble-free performance. On a job like this, where major service facilities are far away, *dependability* is a mighty big asset!

Plan now to take advantage of a GYRO-FLO on *your* next construction job. They're available in 125, 210, 315 and 600 cfm sizes. Ask your I-R representative for complete details.

IR CONTRACTORS' COMBINATION

Ingersoll-Rand

11 Broadway, New York 4, N.Y., U.S.A. 2-78

Steelwork for giant Ford plant bolted in 78 working days

The old adage, "now you see it, now you don't," worked in reverse recently at Ford's new assembly plant at Mahwah, N. J. For the steelwork for this huge structure, the largest Ford assembly plant ever constructed, was erected in only 78 working days.

The one-story mill-type structure is 2115 ft long and 790 ft wide, and ranges in height from 25 ft to 31 ft. Its total layout covers an area of 1,800,000 sq ft. Its steel framework, weighing 9600 tons, is bolted with nearly 250,000 Bethlehem bolts, including approximately 150,000 high-strength bolts.

Bethlehem High-Strength Bolts make possible a saving in erection time because they can be installed quickly by a two-man crew. The hexagonal-head bolts are inserted with two hardened washers, one under the head, the other under the hexagonal nut. Then the nut is tightened to predetermined torque with an air-powered impact wrench, so that it stays tight indefinitely.

Bethlehem High-Strength Bolts are furnished in carbon steel in all sizes from ½ in. to 1¼ in., and in varying lengths. They are heat-treated by quenching and tempering, and meet all the requirements of ASTM Specification A-325.

Whether or not you have immediate construction in mind, you'll want to look into the saving in erection time made possible by the use of Bethlehem High-Strength Bolts. The nearest Bethlehem office is at your service.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Bethlehem High-Strength Bolts

BETHLEHEM STEEL

VALVE THAT OPERATES this full-time steering unit for Cat Motor graders is located on top of the grader frame.

Attachment Locks Front Wheels on Motor Grader

FULL-TIME POWER STEERING for Motor Graders with a front wheel lock feature is now available in a $300 attachment developed by Rivinius, Inc., Eureka, Ill. Manufactured in two models, the unit consists of a Vickers hydraulic pump and a cylinder mounted on the front axle controlled by a valve on the steering shaft. All power to turn the wheels is supplied by the pump. A spring on the valve puts enough tension on the steering wheel to give it "feel." Road shock is snubbed to a minimum by the device.

The unit is equipped with a locking feature that holds the front wheels in the position desired to help keep the motor grader "on course" over rough ground or during ditching operations. This locking arrangement also permits the operator safely to use both hands for other controls.

In the event of power failure, the unit can be steered manually.

AVAILABLE IN TWO MODELS, the power-steering unit consists of a Vickers pump and cylinder mounted on the front axle. It costs $300.

Advertisers in this Issue

Number of copies of this issue printed 40,407

(Continued on page 209)

(Advertisement)

Pace-Setting HD-5G Tractor Shovel

NOW BETTER 3 WAYS

HD-5G TRACTOR SHOVEL

Rated capacity	1¼ cu yd
Belt horsepower	50
Weight, complete	16,200 lb
Dumping height	9 ft, 2 in.

From the time of its introduction seven years ago, the Allis-Chalmers HD-5G Tractor Shovel has been tops in popularity. Many thousands are daily proving their ability and versatility on all kinds of material handling and excavating jobs.

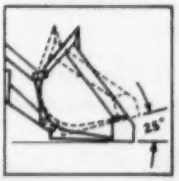
Now, design refinements make the HD-5G a three-way better value than ever before:

1. Has Bigger Rated Capacity

New bucket handles a big 1¼-yd load — streamlined design now helps roll in large loads with less tractor effort. The back of the bucket has been brought forward and the sides extended to cut spillage, put more payload where it's wanted.

2. Helps the Operator Do More

Cleaner dumping with the new bucket saves the operator time and effort shaking out loads.

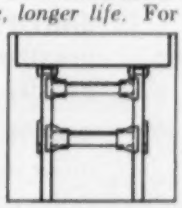


For added versatility, there is a two-position bucket available with both standard automatic return to digging position and operator-controlled tip-back. If the operator chooses to use the controlled tip-back, he can load the bucket, then tip it back approximately 25° before raising, assuring maximum output under special conditions such as downhill loading or loading loose materials.

The HD-5G helps the operator do more in other ways, too — giving him full vision, fast and easy control, cleaner platform and more comfortable seat from which to work, and more working time with truck wheels, support rollers and idlers that need greasing only once every 1,000 hours.

3. Works at Lower Cost

The HD-5G now works at even lower cost than ever before — not just because it *does more*, but because it has features that mean *less maintenance, longer life.* For instance, new type tubular bracing on the bucket booms provides added strength and support, keeps the bucket in line. The floor at the rear of the new bucket has been raised seven degrees to reduce wear on the bottom sheet. Heavy-duty truck wheels and idlers are available for particularly tough working conditions. One-piece, full-length main frame permits unit construction so that major assemblies can be removed without disturbing adjacent units, putting tractor back on the job in hours rather than days.



Ten Quick-Change Attachments Add to HD-5G Versatility

Bulldozer	Crane Hook	Tine Fork
Angledozer	Light Material Bucket	Rock Fork
Narrow Bucket	Trench Hoe	— also rear-mounted Ripper
Rock Bucket	Lift Fork	

See your Allis-Chalmers dealer for more about these and other production-boosting features of the popular HD-5G Tractor Shovel.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

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Famous Last Words...

(By L. H. Scott, Turner Construction Co.)

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■

CONSTRUCTION METHODS AND EQUIPMENT

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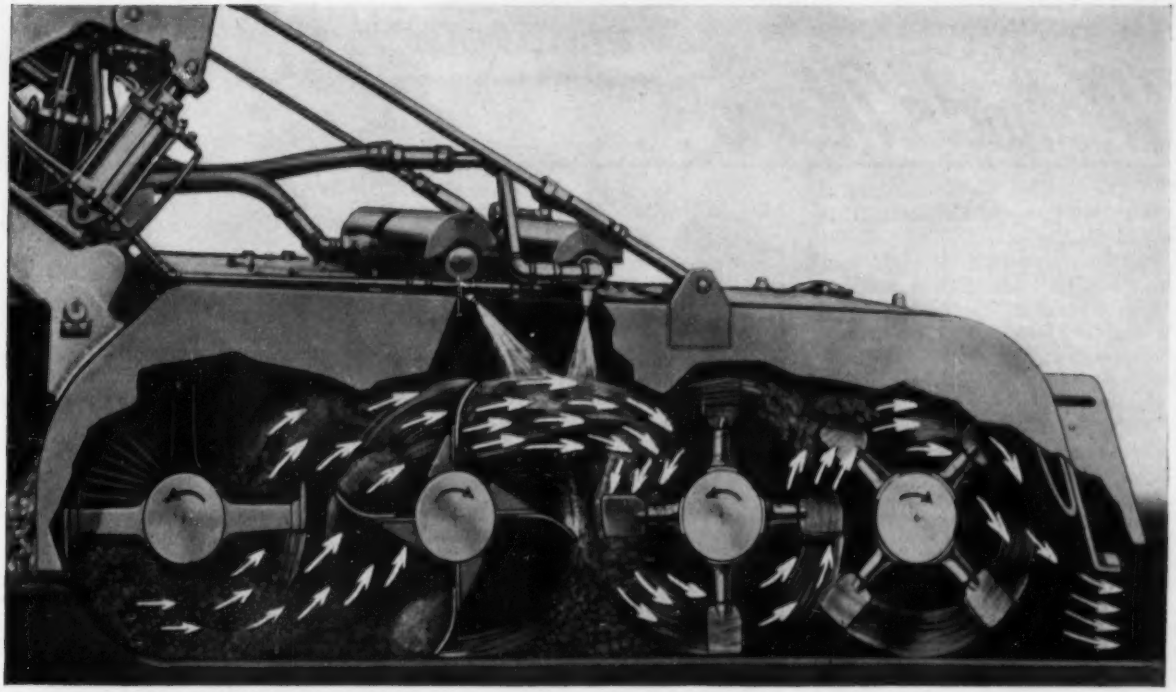


How P&H makes Soil Stabilization an exact science

Getting uniform high quality is a matter of fact with the P&H Soil Stabilizer — *not* guesswork. Exact results can be *predetermined* every time.

Here, in the P&H mixing box, *all* stabilizing functions are performed, not just some of them. Follow its full processing action. Note how atomized liquid is applied while materials are *in transit* between the blending drum and pugmill. This more efficient dispersion assures accurate, uniform coating of materials . . . ready for the twin pugmill to whip into a homogeneous mass for final spreading and immediate compaction.

Compare specifications!

Insist upon having all specifications before you decide on the stabilization method. Know exactly what you can get in quality, uniform strength, speed and low cost and the many other advantages of the P&H method of processing. Then you will be convinced that the P&H Soil Stabilizer is your wisest choice. No other gives you so much production with so little allied equipment and skilled help. *And all this in just one pass!*

P&H Model EA-56 is easily transported from job to job and processes a 5-ft. width.

Larger P&H Soil Stabilizers for processing 8- and 10-ft. widths for all road and base course requirements.

P&H SOIL STABILIZER DIVISION

HARNISCHFEGER CORPORATION

Milwaukee 46, Wisconsin

Ask for the complete story on this modern, lower cost and better method for building all-weather surfaces and base courses for roads, streets, airports, parking areas, etc., of soil-cement, soil-bituminous, or clay-gravel.

the P&H Line

Methods Memo . . .

TWO 900-TON DREDGES will be moved 2 mi overland without dismantling them completely, if plans made by the Steep Rock Mine at Atikokan, Canada, work out. The dredges are 140 ft long, 40 ft wide and 10 ft high; have been used on a job of removing 50,000,000 yd of material from an ore body. Now they will be moved to another site, over an intervening 240-ft height of land. Dredges will be stripped of spuds, motors, pumps and ladders. Next the level of the lake is to be lowered, a dismantling base constructed. Then the level will be raised again and the dredges floated on their bases. The lake will be drained once more and the dredges placed on crawler bodies of large power shovels and hauled to the new site by tractors. CM&E hopes to give its readers a progress story on this interesting move, as the operation develops.

BUSINESS WILL BE GOOD for construction equipment distributors in 1955, but competition will be tougher. So report the Associated Equipment Distributors following a survey made among equipment dealers across the country. Paralleling most other authoritative forecasts, AED members predict that generally, construction volume again will increase in 1955. There were no major differences of opinion between sections. Used construction equipment continues to be a headache to most distributors, but inventories of new machines are normal. Some well-planned purchases integrating both new and used equipment might help many contractors—who also have found that 1955 may be bigger, but tougher competitively.

SERVICE MEN OF THE YEAR is a new honor bestowed for the first time by LeTourneau-Westinghouse Co. upon O. C. Zachary, Greenville, S. C., and Vernon Slade, Denver. Presentation of the awards highlighted a conference of LeT-W service engineers in Peoria. They recognize outstanding performance in field service.

Could be a good idea here for contractors. Why not recognize service of the better kind among staff members by special honors open to anyone with enough go-go-go to do an exceptional job?

INTERESTED IN THE 1954 Annual Report of the Bureau of Public Roads? It covers the fiscal year ended June 30, 1954, and discusses fully all phases of the Federal-aid road construction program, including notable research activities on soils, highways, bridges and airports. Might be good to have a copy around when contemplating some of the extensive road construction planned all over the country. To get a copy, send 30c to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

CONTRACTOR'S HILL along the Panama Canal is undergoing large-scale terracing to remove the threat of a major rock slide that could block navigation. In foreground, blasted rock is being loaded on a 22-ton Euclid rear-dump by a 2½-yd Bucyrus-Erie 54-B shovel—working for the Tecon Corp, Dallas, Tex., contractor for removal of some 2,500,000 yd of material under a $3,391,000 contract. Communication towers in background are part of facilities of U.S. Naval station at summit in the Canal Zone.—Wide World Photo

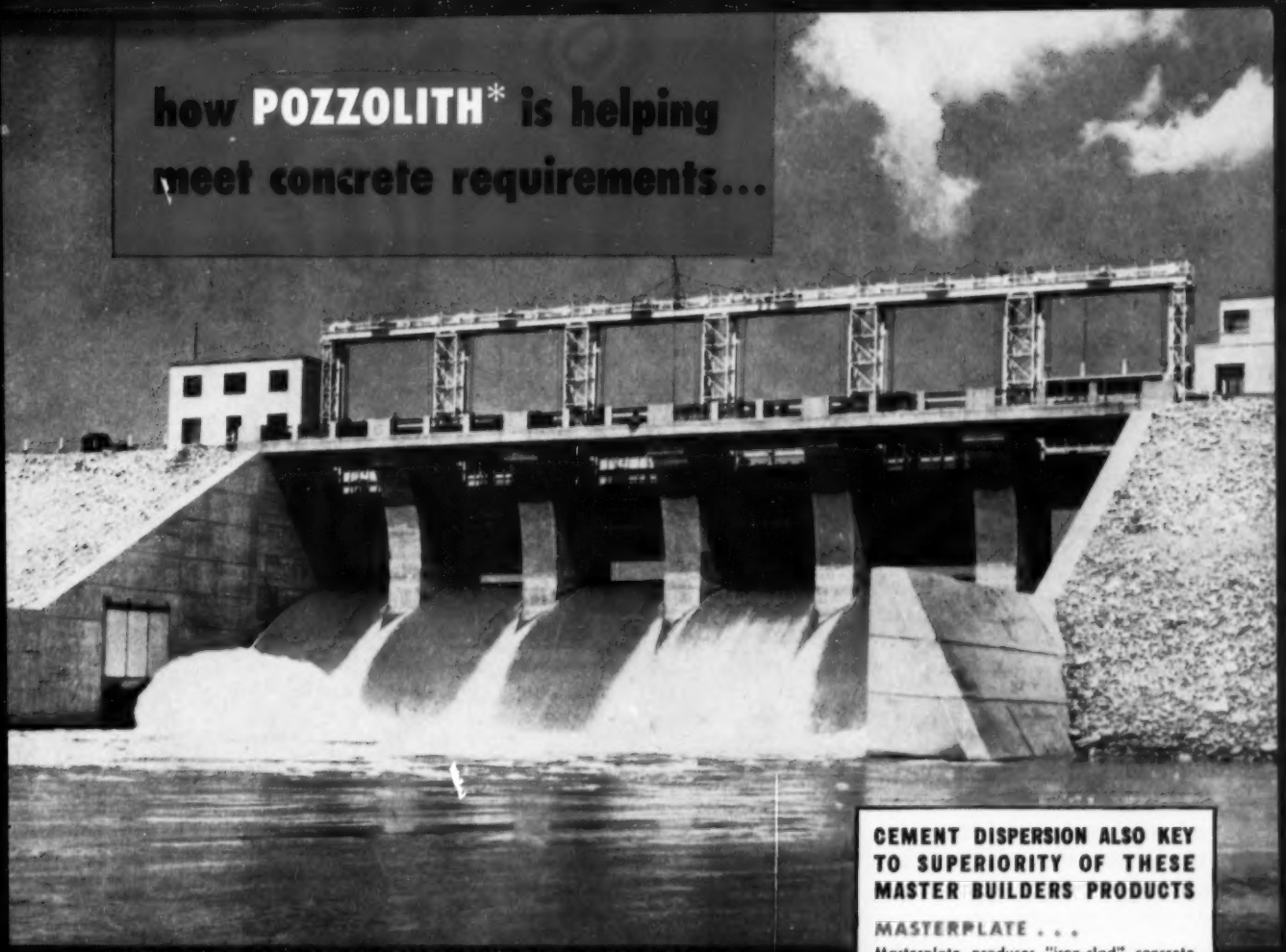
ANONYMOUSLY, an Illinois highway contractor has given funds to permit an annual award of $1,200 to a senior student in highway engineering at the University of Illinois for travel to study and report upon highway design and construction, as carried out by the various states. The grant is called the C. C. Wiley Traveling Award, after Professor Wiley, well-known highway engineer, who retired at Illinois after 46 years on the staff.

SYMONS CONE CRUSHER No. 5,000 was delivered recently by the Norberg Manufacturing Co. This large production by one company attests to the fact that crushing of all kinds of materials is a big business in the world. Symons cones are used the world around on aggregates, non-metallic minerals, ferrous and non-ferrous metals.

A TOP LIFE-SAVING AWARD was given Chester Fincher, a steel worker for the Wolf Construction Co., Logansport, Ind., by Wolf's insurance carrier, Employers Mutuals of Wausau. Fincher was helping to dig for a water line when an old line broke, quickly filling the 9-ft trench. Little June Fissel, coming along on her bike—and mistaking the water for just another puddle—steered around a barricade and rode into the deep ditch. Fincher saw the accident, raced to the spot and dived down to make the rescue. The award paid tribute to the man's decisive action, stating that any hesitation almost certainly would have cost the girl's life.

CLAIMING TO BE THE OLDEST contracting firm in the U. S., the William L. Crow Construction Co., New York, began its 115th year in January—still under the management of the same family. The company was founded in 1840 in New York by Langstaff N. Crow. Great-grandson, William L. Crow, is president now, and brother Ralph is vice-president. Can any company beat this record? Let's hear from some more of you.

how POZZOLITH* is helping meet concrete requirements...



Fanshaw Dam. Flood control unit located 15 miles northeast of London, Ontario. Consulting Engineers—H. G. Acres & Company, Niagara Falls; General Contractors—Foundation-Mannix Ltd., Toronto. Concrete supplied by Red-D-Mix Co., Hamilton, Ontario.

an aid here in producing great durability and abrasion resistance

Pozzolith has proved to be a valuable "tool" in the construction of dams, tunnels, reservoirs, retaining walls, and similar structures because it increases the resistance of concrete to freezing and thawing and lowers permeability. In the Fanshaw Dam Pozzolith also helped meet the important requirement of abrasion resistance.

These are several of the reasons for the wide use of Pozzolith... last year in more than 13,000,000 cubic yards of concrete.

Full information on Pozzolith and "see-for-yourself" demonstration kit sent on request.

*POZZOLITH... the cement-dispersing, water-reducing agent, developed by The Master Builders Co. in 1932, which makes available the optimum amount of air in concrete and fully complies with the water-cement ratio law. Added at the mixer.

CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

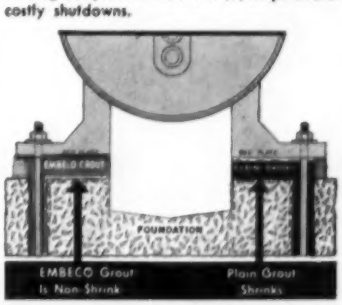
MASTERPLATE . . .

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also spark-safe, non-dusting and easy-to-clean. Non-colored and colored. For new floors and resurfacing.

Section of Masterplate Floor. Note Thickness of Armored Surface.

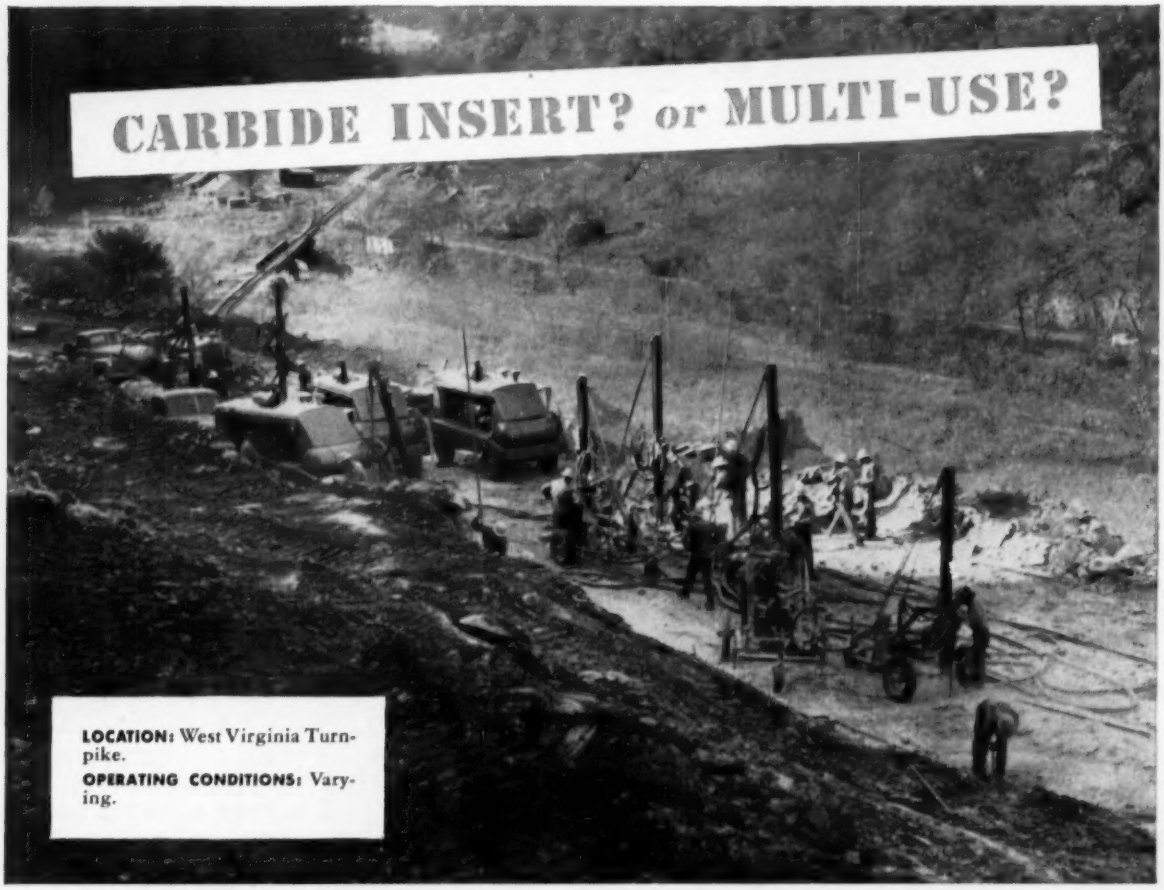
EMBECO . . .

Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, level, lasting bedplate contact . . . (3) helps avoid costly shutdowns.



the MASTER BUILDERS Co.

Subsidiary of American-Marietta Company



14 out of 17 contractors on new West Virginia turnpike cut drilling costs with TIMKEN® multi-use bits

SEVENTEEN contractors equipped with 189 wagon drills did the drilling on the new West Virginia turnpike and 14 of them used Timken® multi-use bits. Some tried other makes and then switched to Timken bits.

These 14 contractors found that, all things considered, Timken multi-use bits gave them lowest cost per foot of hole drilled. In the first place, the large range of Timken bit types and sizes enabled them to select the best bit for each job. Good bit reconditioning service was on hand and the contractors were able to secure a number of bit uses.

If you're drilling ordinary ground, Timken multi-use bits are most economical. However, for extremely hard and abrasive ground, Timken *carbide insert* bits drill faster and more economically. They're also best for drilling constant-diameter holes, small diameter blast holes, extremely deep holes. Some of the turnpike contractors used Timken carbide insert bits when they encountered exceptionally abrasive ground.

All Timken bits are interchangeable in the same thread series and a wide range of different bits fit the same steel. You can change bits right on the job. All Timken bits are made from Timken fine alloy steel and have special shoulder unions to protect the threads from drilling impacts.

Get the bits best fitted to your drilling needs. Call the Timken Rock Bit Engineering Service. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken multi-use rock bit

Timken carbide insert rock bit

your best bet for the best bit ... for every job

TIMKEN

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